

THE JOURNAL OF MEDICAL EDUCATION

OFFICIAL PUBLICATION OF
THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES



February 1956 • VOLUME 31 • NUMBER 2

HISTORY OF MEDICAL EDUCATION—A New Series

Also

- A Method of Teaching
Surgical Pathology.....Ziffren, Layton, Warner and Tidrick
- Rise and Fall of the Correlated Clinical
Courses at Iowa.....William B. Bean
- Fundamental Elements of Medical Education.....Ashley Weech
- Problems in Educational Diagnosis by the Student in
the Diabetes Clinic.....Alfaretta C. Johnson-Cooley
- Outline for a Curriculum for Teaching
Psychiatry in the Medical School.....A Report

Just Published!

Sponsored by the National Research Council
Spector's **HANDBOOK OF TOXICOLOGY**

See SAUNDERS ADVERTISEMENT—just inside

*Announcing the March Publication of
a New short text and reference
on the essentials of Urology*

Clarke and Del Guercio

UROLOGY

By **B. G. Clarke, M.S., M.D., F.A.C.S.**, Associate Professor and Acting Head, Department of Urology, Tufts University School of Medicine; and **Louis R. M. Del Guercio, M.D.**, Resident in Surgery, St. Vincent's Hospital, New York City.

Here, in a book brief enough to be read during the urology course or to be used in board reviews, are the essentials of urology—presented as an area within the study of general biology and medicine, rather than as a specialty. This new book will be particularly valuable as a teaching text because it makes free use of diagrams and pictures in place of detailed written descriptions. An important feature of the book is its collection of X-rays and photomicrographs from typical case disorders, accompanied by the patients' histories—material which amplifies the text in much the same way as a series of short clinics on the commoner urological disorders.

Particularly helpful for your students will be the line drawings, which present some of the more important anatomical and surgical principles in urology. Most of these are original; a few have been sketched from well-known illustrations in important monographs, in order to interest the reader in consulting the original works.

UROLOGY is a unique text for medical students because it presents its material in terms of basic anatomy, physiology, embryology, pathology, biochemistry and bacteriology as a part of the study of general medicine, rather than presenting urology as a specialty. **The book includes illustrative material and case histories derived from about 100 typical cases of urogenital disease—presentations which serve as brief clinics in the field of urology.** The authors cover recent advances in the field and provide a list of references to important recent books and articles on each disorder which the text discusses.

Note the CONTENTS of Clarke and Del Guercio's UROLOGY:

PART I: DIAGNOSIS OF GENITOURINARY DISORDERS—1. History Taking—2. Physical Examination—3. Laboratory Diagnosis—4. X-ray Diagnosis. **PART II: PHYSIOLOGIC DISTURBANCES**—5. Physiology of the Kidney (by Joseph M. Hayman, Jr.)—6. Diseases of the Nephron (by Joseph M. Hayman, Jr.)—7. Physiology of Urine Transport—8. Neurogenic Dysfunction of the Bladder—9. Physiology of Semen Conduction and Male Infertility. **PART III: PRINCIPLES OF TREATMENT**—10. Surgical Anatomy, Catheterization, and Surgical Technique—11. Embryology of the Urogenital Tract and Treatment of Malformations—12. Urinary and Genital Infections (by B. G. Clarke and John J. Finn, Jr.)—13. Urinary Disturbances in the Female—14. Genitourinary Tuberculosis—15. Physiology and Treatment of Urinary Calculi—16. Urinary Obstructions—17. Urogenital Wounds and Injuries—18. Tumors of the Urogenital Organs.

Approximate Format: 250 pages, 6 x 9, 162 illustrations



BLAKISTON DIVISION, MCGRAW-HILL BOOK COMPANY, INC.

330 WEST 42nd STREET, NEW YORK 36, NEW YORK

NEW — from SAUNDERS

Spector—*Handbook of Toxicology*

**New
Book**

A 5-volume work sponsored by the National Research Council—The most comprehensive collection of data ever compiled on the toxic qualities and dosages of all substances which have known adverse effects on living organisms. The first of these, **VOLUME I on ACUTE TOXICITIES OF SOLIDS, LIQUIDS AND GASES TO LABORATORY ANIMALS** is now ready. It lists 2363 chemical compounds and indicates lethal dosages of each in various laboratory animals. This data can be applied within broad limits to men.

Edited by WILLIAM S. SPECTOR. Prepared under the Direction of the Committee on the Handbook of Biological Data, Division of Biology and Agriculture, National Academy of Sciences—The National Research Council. Principal Contributor—WOLFGANG F. von OERTINGEN, M.D., Ph.D., Chief Toxicologist, The National Institutes of Health, Bethesda, Maryland. *Volume I*, 408 pages, 8½" x 11", \$7.00. *Just Ready.* *Volume II: Anti-infectives—Chemical Carcinogens—Metabolites of Toxic Compounds.* *Volume III: Pesticides.* *Volume IV: Poisons and Poisoning.* *Volume V: Pollutants—Chronic Toxicities—Industrial and Radiation Toxicity.* *The other 4 volumes will be ready soon.*

Laughlin—*Neuroses in Clinical Practice*

**New
Book**

This *new* book presents a clear picture of the mechanisms involved in the production of the various neuroses. The author describes these mental disturbances so clearly the student will gain an immediate picture of the causative factors and the therapeutic measures necessary for effective management.

By HENRY P. LAUGHLIN, M.D., Assistant Professor of Psychiatry, George Washington University School of Medicine. About 776 pages, 6" x 9". *New—Just Ready.*

Wolff—*Electrocardiography*

Dr. Wolff carefully describes ECG tracings and tells you exactly why changes occur with disease. He discusses their significance in terms of cardiac status and clinical diagnosis and gives you all the information you need to understand an ECG pattern. The *New (2nd) Edition* contains a new section on electrocardiographic changes in the cardiac arrhythmias. The text has been thoroughly revised and new illustrations added.

By LOUIS WOLFF, M.D., Assistant Clinical Professor of Medicine, Harvard Medical School. 384 pages, 6¼" x 9¼", with 199 illustrations. *New (2nd) Edition—Ready in March, 1956.*

**New
(2nd)
Edition**

Pillsbury, Shelley & Kligman—*Dermatology*

In this *new* book the student is offered a rare opportunity to learn dermatology systematically through a fuller understanding of the mechanisms of skin disorders. The authors give you a concise picture of anatomy, physiology and chemistry of the skin—then follow-up, on a sound physiologic basis, with recognition, diagnosis and treatment of all common skin disorders.

By DONALD M. PILLSBURY, M.A., M.D., Professor and Director of the Department of Dermatology, University of Pennsylvania School of Medicine; Chairman, Subcommittee on the Cutaneous System and Member of the Committee on Medicine and Surgery, National Research Council; Consultant in Dermatology to the Surgeon General of the Army, Air Force and United States Public Health Service; WALTER B. SHELLEY, M.D., Ph.D., Associate Professor of Dermatology, University of Pennsylvania School of Medicine; Chief of Dermatology Clinic, Hospital of the University of Pennsylvania; and ALBERT M. KLIGMAN, M.D., Ph.D., Associate Professor of Dermatology, University of Pennsylvania School of Medicine; Assistant Professor of Dermatology, University of Pennsylvania Graduate School of Medicine. About 1150 pages, 6¼" x 9¼", about 600 illustrations. *New—Ready in July, 1956.*

**New
Book**

W. B. SAUNDERS COMPANY

West Washington Square

Philadelphia 5

FEBRUARY 1956, VOL. 31, NO. 2

1

Table of Contents

VOL. 31

FEBRUARY 1956

No. 2

ARTICLES

HISTORY OF MEDICAL EDUCATION—A New Series

- Introduction
—Erwin H. Ackernecht 81

- Medical Education in the American Colonies
—Genevieve Miller 83

- A Method for Teaching Surgical Pathology
—Ziffren, Layton, Warner and Tidrick 95

- Rise and Fall of the Correlated Clinical
Courses at Iowa
—William B. Bean 97

- Fundamental Elements of Medical Education
—Ashley Weech 101

- Problems in Educational Diagnosis by the
Student in the Diabetes Clinic
—Alfaretta C. Johnson-Cooley 108

- An Outline of a Curriculum for Teaching
Psychiatry in Medical Schools
—A Committee Report (Committee on
Medical Education of the American
Psychiatric Association) 115

- EDITORIALS AND COMMENTS 129

- NEWS DIGEST 133

- College Briefs 60

- AUDIOVISUAL NEWS 140

- BOOK REVIEWS 147

- PERSONNEL EXCHANGE 148

- Association Officers, Staff, Committees V

- Calendar of Meetings X

- Advertisers Index X

II

The Journal of MEDICAL EDUCATION



Official publication of the Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1.

The Journal of MEDICAL EDUCATION is owned and published monthly by the Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1; Phone, State 2-8870. Entered as second class matter January 17, 1930, at the Post Office, Chicago, Ill., under the Act of March 3, 1879.

EDITORIAL BOARD: John Z. Bowers, chairman, Wisconsin; Stanley E. Bradley, Columbia; T. Hale Ham, Western Reserve; Julius H. Comroe Jr., Pennsylvania; Russell L. Holman, Louisiana State; Erwin A. Ackernecht, Wisconsin (consultant); Dean F. Smiley, secretary.

STAFF: Editor, Dean F. Smiley; Assistant Editor, Barbara M. Peterson; Editorial Assistant, Lucile Smith.

EDITORIAL POLICY: Articles ordinarily will be limited to 5,000 words in length. Articles longer than this usually will require treatment as a supplement and necessitate a publication subsidy. Responsibility for signed articles and editorials is not assumed by the Association's officers or the Journal's Editorial Board but by the individual author.

SUBSCRIPTION RATES: \$7 per year, \$1 per single copy; foreign \$8 per year; \$1.25 per single copy. Change of Address: Notifications of changes of address should include the old address wrapper and the new address.

COPY DEADLINE: Copy for typesetting must be in by the 1st and plates by the 10th of the month preceding publication.

ADVERTISING: Business Manager, Roy G. Perry, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill.; State 2-8870.

REPRINTS: Each author routinely receives 25 copies of his article promptly after publication. Additional reprints may be purchased from the Journal in quantities of 100, and in multiples of hundreds at a price depending on the length of the article.

Copyright: ©February 1956, by the Association of American Medical Colleges.

Printed in U.S.A.

Journal of MEDICAL EDUCATION

A READY REFERENCE OF DIAGNOSTIC CRITERIA

Clinical Diagnosis

REGIONAL, SYSTEMIC
AND
THE BODY AS A WHOLE

By ELMER G. WAKEFIELD, M.D., F.A.C.P.

Diplomate, American Board of Internal Medicine; Consulting Physician, Section of Medicine, Mayo Clinic; Associate Professor of Medicine, Mayo Foundation for Medical Education and Research, University of Minnesota.

Here, for the first time in many years, is a compact, single-volume, comprehensive text (1611 pages) devoted to applied principles, practical methods, and tested technics for the diagnosis of disease.

Wakefield's CLINICAL DIAGNOSIS has been prepared for the use of clinicians by a well known clinician whose own broad experience has been supplemented by the accumulated records of many thousands of cases diagnosed each year at the Mayo Clinic by its staff of trained diagnosticians.

For ease of reference and practical use the text matter has been divided into

three main sections with the diagnosis of regional diseases covered in 531 pages, the diagnosis of systemic diseases in 660 pages and the diseases which affect the entire body in 354 pages. Each section is practically a complete book in itself but each supplements the others and together they make up an invaluable reference for the general practitioner, the internist, the resident, and the interne.

These methods and technics are those with which the physician can correctly diagnose at least seven of every ten cases which present themselves to him without the necessity of consulting a specialist.

COMMENTS BY REVIEWERS

"This is just the book needed to supplement standard textbooks of internal medicine." *U. S. Armed Forces Medical Journal.*

"Very little has escaped his net. Common disorders are discussed at proper length, and uncommon ones are kept in their proper perspective; but even the rarest finds a niche somewhere." *The Lancet (London).*

PUBL. FEB. 1955. 1611 PAGES. 135 FIGURES. \$22.50

ORDER
THROUGH
BOOK STORES,
BOOK SELLERS
OR THE PUBLISHER

APPLETON-CENTURY-CROFTS, INC.

35 WEST 32nd STREET, NEW YORK 1, N. Y.

(Publishers of THE NEW CENTURY CYCLOPEDIA OF NAMES)

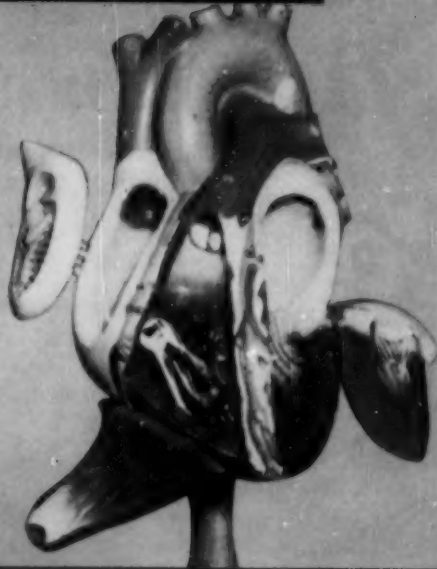
with GPL *ii-TV*

every student has

front

row

center



In few fields of learning is close visual observation as important as in medicine. Whether the subject is a syndrome, a surgical technique, a psychiatric interview—whatever the exhibit—it is essential not only that the student see it, but that he see it clearly—if possible, as clearly as if he stood at the elbow of the teaching doctor.

That is how a student does see with GPL *ii-TV*—the institutional and industrial television system developed by General Precision Laboratory. A GPL camera, smaller than a football, stands unobtrusively by the teacher. It transmits a close-up or an overall view over a closed circuit to any number of monitors or receivers; for auditorium use, the GPL TV projector enlarges the image for presentation on a wide screen. Receivers and projectors can be anywhere within a building or scattered through several buildings.

A mid-western psychiatric clinic has just installed a GPL system that enables students in a lecture hall to follow clearly psychiatrists treating patients. Each student sees and hears far better than he ever could with the old method of peering through one-way windows. Any number can watch a demonstration.

Many doctors are familiar with GPL closed-circuit television through the various medical clinics and demonstrations that have made use of it to put on inter-city or nationwide programs. Hospitals and institutions have, of course, many non-teaching uses for *ii-TV*. GPL *ii-TV* cameras can be used for surveillance of entrances and corridors. They will enable nurses at central points to watch over specific patients or whole wards. And *ii-TV* is equally valuable in permitting quick visual inspection of records stored in a remote file room.

The GPL equipment that does all these things—and many others—is surprisingly inexpensive. The cost of the *ii-TV* camera is less than one-sixth of the national average cost of a single hospital bed. No structural alterations are needed to install it, nor does it require a technical staff to operate it. The equipment is so light and compact that it can easily be moved from place to place. Incorporated in the system are all the advanced engineering and manufacturing skills that have made General Precision Laboratory one of the country's leading manufacturers of broadcast, industrial and theater television equipment.

For information on how GPL *ii-TV* can help with your special problems, write to:



General Precision Laboratory Incorporated
Pleasantville, New York

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION



Association of American Medical Colleges

OFFICERS OF THE ASSOCIATION 1955-56

Officers and Members of Executive Council

President and Chairman of Council:
ROBERT A. MOORE.....Pittsburgh
President-Elect: JOHN B. YOUMANS
.....Vanderbilt
Vice-President: HAROLD S. DIEHL.....Minnesota
Treasurer: STOCKTON KIMBALL.....Buffalo
Immediate Past President: VERNON W. LIPPARD
.....Yale
Secretary: DEAN F. SMILEY.....AAMC
GEORGE N. AAGAARD.....Washington (Seattle)
WALTER R. BERRYHILL.....North Carolina
LOWELL T. COGGERSHALL.....U. of Chicago
THOMAS H. HUNTER.....U. of Virginia
JOHN Z. BOWERS.....Wisconsin
JOHN F. SHEEHAN.....Stritch (Loyola)

Staff

DEAN F. SMILEY, Secretary; Editor, Medical
Education
J. EDWIN FOSTER, Director, Medical Audio-
Visual Institute
HELEN H. GEE, Director of Research
WILLIAM N. HUBBARD JR., Associate Secretary

Committees of the Association 1955-56

(Chairmen listed first—Affiliation listed in
italics)

AUDIOVISUAL EDUCATION

Walter A. Bloedorn, Geo. Washington
A. J. Gill, Southwestern
Roscoe L. Pullen, Missouri
William W. Frye, Louisiana
W. Clarke Wescoe, Kansas
William J. Darby, Vanderbilt
Clarence E. de la Chapelle, NYU, P.G.
Tom Jones, Consultant, Illinois Emeritus

BORDEN AWARD

Joseph Markee, Duke
Arnold Rich, Johns Hopkins
Elmer H. Stoltz, Rochester
Windsor C. Cutting, Stanford
Oliver Lowry, Washington U.

CONTINUATION EDUCATION

Samuel Proger, Tufts
James W. Colbert, St. Louis
Theodore H. Harwood, North Dakota
Robert Howard, Minnesota
Frank Roberts, Tennessee
Daniel T. Rolfe, Meharry
Thomas Sternberg, UCLA
Grant Taylor, U. of Texas, P.G.
Milton Terris, Buffalo

EDITORIAL BOARD

John Z. Bowers, Wisconsin
Stanley E. Bradley, Columbia
T. Hale Ham, Western Reserve

Julius H. Comroe, Pennsylvania (Grad)
Russell L. Holman, Louisiana
Erwin H. Ackerknecht, Consultant, Wisconsin
Dean F. Smiley, AAMC

FINANCING MEDICAL EDUCATION

Joseph C. Hinsey, New York Hosp.—Cornell
Walter A. Bloedorn, Geo. Washington
Donald G. Anderson, Rochester
Stanley E. Dorst, Cincinnati
Vernon W. Lippard, Yale
Norman Topping, Pennsylvania
John B. Youmans, Vanderbilt

INTERNATIONAL RELATIONS IN MEDICAL EDUCATION

Richard H. Young, Northwestern
M. E. Lapham, Tulane
E. Grey Dimond, Kansas
Walter E. Macpherson, C.M.E.
Norman B. Nelson, Iowa
Jean A. Curran, SUNY
R. Hugh Wood, Emory
Francis Scott Smyth, U. of Cal. (S.F.)
Elizabeth T. Lam, Consultant, Comm. on
Internat. Exch. of Persons
Harold H. Loucks, Consultant, China Medical
Board of New York, Inc.
Myron Wegman, Consultant, Pan American
Sanitary Bureau

INTERNSHIPS, RESIDENCIES AND GRADUATE MEDICAL EDUCATION

E. Hugh Luckey, Cornell
John Deitrick, Jefferson
Howard Armstrong, Illinois
D. W. E. Baird, Oregon
F. Douglas Lawraason, Arkansas
Richard W. Vilter, Cincinnati
George A. Wolf Jr., Vermont
Francis R. Manlove, Colorado
R. D. Pruitt, Mayo Foundation

LICENSURE PROBLEMS

J. Murray Kinsman, Louisville
John Hirschboeck, Marquette
Gordon E. Goodhart, U. of S. Cal.
Arthur W. Wright, Albany
Wayne L. Whitaker, Michigan
James E. McCormack, Columbia

MEDICAL CARE PLANS

John F. Sheehan, Loyola
Frank R. Bradley, Washington U.
R. H. Kampmeier, Vanderbilt
Henry B. Mulholland, Virginia
Albert Snoke, Yale

PLANNING FOR NATIONAL EMERGENCY

Stanley W. Olson, Baylor
Mark R. Everett, Oklahoma
Thomas R. Forbes, Yale
Stockton Kimball, Buffalo
John B. Truslow, Med. Coll. of Virginia

(Committees continued on page 6)

(Committees continued from page 5)

PROGRAM

Robert A. Moore, Pittsburgh
John B. Youmans, Vanderbilt
Harold S. Diehl, Minnesota
Dean F. Smiley, Secretary

PUBLIC INFORMATION

John L. Caughey, Western Reserve
Francis M. Forster, Georgetown
John D. Van Nuy, Indiana
Harold C. Wiggers, Albany
Joseph B. Kelly, Consultant, Johns Hopkins
Milton Murray, Consultant, Medical Evangelists
Ralph Rohwedder, Consultant, Nat'l. Soc. for Med. Research
Raymond O. Torr, Consultant, Nat'l Fund for Med. Educ.

EDUCATIONAL RESEARCH AND SERVICES

George Packer Berry, Harvard
D. Bailey Calvin, Texas
Stanley E. Dorst, Cincinnati
Thomas Hunter, U. of Virginia
Carlyle Jacobsen, SUNY
Vernon W. Lippard, Yale
W. Clarke Wescoe, Kansas
William R. Willard, SUNY, Syracuse
Robert A. Moore, Pittsburgh, ex officio
Helen H. Gee, Secretary

SUBCOMMITTEE ON EVALUATION AND MEASUREMENT

Thomas Hunter, U. of Virginia
John T. Cowies, Pittsburgh, vice chairman
George Packer Berry, Harvard
Carlyle Jacobsen, SUNY
William Schofield, Minnesota
Helen H. Gee, AAMC

VETERANS ADMINISTRATION MEDICAL SCHOOL RELATIONSHIPS

Joseph Hayman, Tufts
George A. Bennett, Jefferson
Robert C. Berson, Alabama
Gordon H. Scott, Wayne
Harold Hinman, Puerto Rico

Representatives to Related Organizations

ADVISORY BOARD FOR MEDICAL SPECIALTIES

Stanley E. Dorst, Cincinnati
John B. Youmans, Vanderbilt

ADVISORY COUNCIL FOR THE NATIONAL FUND FOR MEDICAL EDUCATION

Joseph C. Hinsey, New York Hosp.—Cornell
John B. Youmans, Vanderbilt
Vernon W. Lippard, Yale

ADVISORY COUNCIL ON MEDICAL EDUCATION

Robert A. Moore, Pittsburgh
John B. Youmans, Vanderbilt

AMERICAN COUNCIL ON EDUCATION

Marion Fay, Women's Medical Coll.
William Stone, Maryland

Edward J. Van Lier, W. Va.
John T. Cuttino, Med. Coll. of S. C.
George A. Bennett, Jefferson
Robert S. Jason, Howard

FEDERATION OF STATE MEDICAL BOARDS

J. Murray Kinsman, Louisville

FELLOWSHIPS SELECTION BOARD (WHO)

Walter A. Bloedorn, George Washington

NATIONAL INTERN MATCHING PROGRAM, INC.

E. Hugh Luckey, Cornell
George A. Wolf Jr., Vermont
Lowell T. Coggeshall, U. of Chicago

JOINT COMMITTEE ON MEDICAL EDUCATION IN TIME OF NATIONAL EMERGENCY

Stockton Kimball, Buffalo
Mark R. Everett, Oklahoma
Stanley W. Olson, Baylor
Dean F. Smiley, AAMC

LIAISON COMMITTEE WITH COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Vernon W. Lippard, Yale
Robert A. Moore, Pittsburgh
John B. Youmans, Vanderbilt
Harold S. Diehl, Minnesota
Dean F. Smiley, AAMC

MEDICAL ADVISORY COMMITTEE ON INSTITUTE OF INTERNATIONAL EDUCATION

Duncan W. Clark, SUNY. (Brooklyn)
Lawrence Hanlon, Cornell
Ralph E. Snyder, N.Y. Med. Coll.

NATIONAL BOARD OF MEDICAL EXAMINERS

John Deitrick, Jefferson
Robert A. Moore, Pittsburgh
B. O. Raulston, Southern California, Emeritus

NATIONAL HEALTH COUNCIL

Jean A. Curran, SUNY. (Brooklyn)
Aura Severinghaus, Columbia
John McK. Mitchell, Pennsylvania

SUBCOMMITTEE ON MEDICAL EDUCATION FOR NATIONAL DEFENSE

Stanley W. Olson, Baylor
George V. Byfield, Illinois
Lawrence Hanlon, Cornell
Stockton Kimball, Buffalo
John B. Youmans, Vanderbilt
John Truslow, Med. Coll. of Va.
William C. Moloney, Tufts

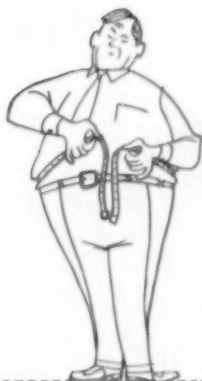
COOPERATING COMMITTEE ON GRADUATES OF FOREIGN MEDICAL SCHOOLS

John McK. Mitchell, Pennsylvania
J. Murray Kinsman, Louisville
Wayne L. Whitaker, Michigan

MEMBER OF INTERNSHIP REVIEW BOARD OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

John Deitrick, Jefferson

measuring up!



The doctor's help is often needed if a busy man is to keep his waistline from expanding along with his responsibilities.

Insurance statistics show mortality rate is high among overweight persons . . . increasing with increasing overweight. Yet weight can be lost and desired weight maintained on a palatable diet of ordinary foods . . . easily obtained at the family table or chosen from a restaurant menu.

Medically supervised studies on weight reduction show active men and women achieving satisfactory weight losses, without undue hunger or loss of pep . . . on diets containing approximately equal weights of protein, fat and carbohydrate. A combination of protein and fat slows digestion and absorption of nutrients, thus delaying the onset of hunger between meals.

The foods included in these diets provide all essential

nutrients in amounts recommended for adults. Only calories are in deficit. Dairy foods are an important feature of these meals because of their high proportion of nutrients in relation to the calories they provide. Their taste appeal and variety make the diet easy to follow until the desired weight is lost.

Doctors! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

These materials are yours on request—without cost or obligation. Simply fill out the coupon below and mail it today.



The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

NATIONAL DAIRY COUNCIL—A non-profit organization

Since 1915 . . . promoting better health through nutrition research and education.

111 N. Canal Street, Chicago 6, Illinois.

Please send me, without cost or obligation, a pad of diet instruction sheets and leaflet on weight reduction.

T-2

NAME _____

PROFESSIONAL DESIGNATION _____

ADDRESS _____

CITY _____

ZONE _____

STATE _____



MEDICAL LITERATURE

CONFIRMS EFFECTIVENESS OF

MALT SOUP *Extract*

IN CORRECTING HARD, DRY STOOLS
OF CONSTIPATED BABIES

PALATABLE AND RELIABLE FOOD LAXATIVE—MACQUEEN

"Constipation does occur in breast fed infants. . . . Due to the large amount of casein present in cow's milk, constipation in artificially fed infants is not infrequent. . . . The use of the 'malt soup extract' represents one of the easiest, most palatable, and most reliable food laxatives."

MacQueen, J. C.: Nutritional Management
of Some Common Intestinal Disorders.
J. Iowa St. M. Soc. 40: 171, 1950.

HARD STOOLS—GRULEE AND ELEY

"Should the child begin to have hard stools, it is well to replace the dextri-maltose with dri-malt soup extract, a teaspoonful at a time until the stool becomes soft. This may be varied from day to day."

Grulee, C. G., and Eley, R. C.:
The Child in Health and Disease. Baltimore,
The Williams & Wilkins Co., ed. 2, 1952, p. 75.

VERY USEFUL—GILLESPIE

"The second part of the treatment is concerned with obtaining regular, small soft stools. . . . In certain cases a non-diatatic malt extract (Borcherdt's Malt Soup) alone or with other carbohydrates has been very useful in the formula for correcting constipation of infants."

Gillespie, J. B.: Proctologic
Problems of Infants and Children. Illinois
M. J. 96: 371, 1949.



Borcherdt

MALT SOUP
Extract

What It Is: Specially processed malt extract neutralized with potassium carbonate.

How It Works: Promotes aciduric bacteria in colon. Grain extractives and potassium ions contribute to gentle laxative effect.

Dose: Infants: 1 to 2 Tbs. in day's feeding. Breast-fed Infants: 1 to 2 Tsp. in water before nursings. Children: 1 to 2 Tbs. half hour before breakfast and at bedtime. Makes delicious "malted" drink.

8 oz. and 16 oz. jars • Samples and literature on request

BORCHERDT MALT EXTRACT CO. • 217 N. Wolcott Ave., Chicago 12, Ill.

TO FIT THE THERAPY

TO THE SPECIFIC

SEIZURE TYPE...

TRIDIONE®

(Trimethadione, Abbott)

First successful synthetic anticonvulsant—now agent of choice—for symptomatic control of petit mal, myoclonic jerks and akinetic seizures.

PARADIONE®

(Paramethadione, Abbott)

Homologue to TRIDIONE. An alternate preparation which is often effective in cases refractory to TRIDIONE therapy. Especially for treatment of petit mal triad.

PHÉNURONE®

(Phenacephide, Abbott)

A potent anticonvulsant for psychomotor epilepsy, grand mal, petit mal and mixed seizures. Often successful where all other therapy has failed.

GEMONIL®

(Metharbital, Abbott)

A new drug of low toxicity for grand mal, petit mal, myoclonic and mixed seizures. Effective in disorders symptomatic of organic brain damage.

Calendar of Meetings

ASSOCIATION OF AMERICAN MEDICAL COLLEGES 67th Annual Meeting, November 12-14, 1956 Broadmoor Hotel, Colorado Springs, Colo.

Conference of International Union for Health Education of the Public—April 27-May 5; Rome, Italy.

Congress of the International Society of Hematology—August 27-September 1; Hotel Somerset, Boston, Mass.

Congress of Latin Society of Ophthalmology—April 24-28; Madrid, Spain.

European Congress of Cardiology—Sept. 10-14; Stockholm, Sweden.

Inter-American Congress of Cardiology—November 4-10; Havana, Cuba.

International Academy of Pathology—April 24-25; Cincinnati, O.

International Professional Union of Gynecologists and Obstetricians—Sept. 28-29; Madrid, Spain.

Index to Advertisers

AAMC	Inside Back Cover
Abbott Laboratories	IX
Appleton-Century-Crofts, Inc.	III
Armour Laboratories	74
Blakiston Div., McGraw-Hill Book Co.	
	Inside Front Cover
Borchardt Malt Extract Co.	VIII
General Precision Laboratory	IV
Hoffman-LaRoche, Inc.	XI

Lea & Febiger	XIII
J. B. Lippincott	Back Cover
C. V. Mosby	XIV
National Dairy Council	VII
Ortho Pharmaceutical Corp.	146
W. B. Saunders Co.	Front Cover, I
Taylor Instrument Co.	XII
Woodward Medical Personnel Bureau	148

Aei Quoque Auxilio Sunt

THE YEAR BOOK PUBLISHERS, INC., conceived at a luncheon in 1901 attended by a group of Chicago physicians, has become one of America's leading medical publishers. Until 1939 the company's activities were limited to the publication of the 13-volume series of Practical Medicine Year Books, each under the editorship of an authority in a particular field of clinical medicine. Through the years the Year Books have been edited by such physicians as Frank Billings, J. P. Murphy, Isaac Abt, J. B. DeLee, Bernard Fantus, B. W. Sippy and Charles Mix.

In 1939 Year Book Publishers entered the field of general medical publishing, beginning these efforts with a series of General Practice Manuals now numbering almost 30 volumes. Other contributions to American medical literature include such monographs as "Pediatric X-ray Diagnosis," "Medical Physics," the ever popular "Disease-a-Month" series, the "Handbooks of Operative Surgery," the "Handbooks of Roentgen Diagnosis," to mention only a few. Presently Year Book Publishers is expanding into the textbook field and is planning to make important contributions to the medical student in coming years.

The company's activities and sales program are carried out on a world-wide basis. Medical book dealers, here and abroad, maintain adequate stocks of all titles so that the demands of the medical profession may be served promptly.

Efforts to publish books most useful in the practice of medicine is assurance that the standards established with the company's founding will be maintained.

Rest comes best to the relaxed patient.

Noludar relaxes the patient and usually induces sleep within one-half to one hour, lasting for 6 to 7 hours. Clinical studies in over 3,000 patients have confirmed the usefulness of Noludar in the relief of nervous insomnia and daytime tension. Noludar 'Roche' is not a barbiturate. Available in 50-mg and 200-mg tablets, and in liquid form, 50 mg per teaspoonful.

Noludar® - brand of
methyprylon
Hoffmann - La Roche Inc
Nutley . N.J.



For 49 years the Standard of Accuracy!

**TYCOS* Aneroid
reigns supreme
in convenience,
reliability**



Stays Accurate ... Unless misused.

Ten-Year Warranty ... Manometer readjusted free of charge, even if you drop it! (*Cost of parts extra*).

Time Saving ... Zip open case. Circle Cuff around arm ... Hook ... and it's on!

Pocket Size ... Weighs only 19 ounces ... Easily fits coat pocket.

Greater Protection During Use ... Gage attached to Cuff minimizes accidental dropping.

Easier to Use ... Hook Cuff fits any size adult arm. Cannot balloon at edges.

Roomy Zipper Case ... Easily holds manometer and cuff — ready to use.

Full Range Dial ... Up to 300 mm.

• • •

Only \$42.50 with Hook Cuff and pocket zipper case at your surgical supply dealer's today. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

*Reg. U.S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

Herbut — Pathology

By **PETER A. HERBUT, M.D.**

Professor of Pathology, Jefferson Medical College and Director of Clinical Laboratories,
Jefferson Medical College Hospital, Philadelphia, Pa.

NEW. Important pathologic changes encountered in the daily practice of medicine are presented clearly and concisely in this well-organized work. In preparing the text for undergraduate medical students, Dr. Herbut has been aware of the need for a logically presented, well-illustrated factual work, with ample correlated clinical material. In being complete without unessential details, the book more than meets these requirements. It is based upon the author's didactic pathologic lectures given at Jefferson Medical College, and defines the subject in accordance with the five major categories of disease.

*New. 1227 Pages, 7" x 10". 1378 Illustrations on 651 Figures
and 6 Plates in Color. \$16.00*

Babcock's Principles and Practice of Surgery

Edited by **KARL C. JONAS, B.S., M.D., M.S. (Surg.), F.A.C.S., F.I.C.S.**

Philadelphia, Pa. 56 **COLLABORATING AUTHORS**

SECOND EDITION. Every aspect of surgery, including nature, diagnosis and treatment, is given in this highly authoritative one-volume work. All of the advances in general surgery and the surgical specialties are in this greatly enlarged 2nd edition. The sequence of presentation has been rearranged to meet modern-day teaching requirements. Eight new chapters and almost 500 illustrations have been added, and the text-matter reset in the popular 2-column format. This edition represents the work of 56 active teachers, writing under the editorial guidance of Dr. Karl C. Jonas.

*2nd Edition, 1543 Pages, 7" x 10". 1006 Illustrations and
10 Plates in Color. \$18.00*

Ziskind—Psychophysiologic Medicine

By **EUGENE ZISKIND, M.D.**

Clinical Professor of Psychiatry, Univ. of Southern California School of Medicine, Los Angeles

PRACTICAL. Controversy and confusion are swept away in this clear understanding of the psychotherapeutic approach to emotional conflicts and frustrations. The author tells how to recognize and diagnose psychologic factors in illness, and gives a detailed explanation of therapeutic technics. This is followed by discussions of family and social origins of personality conflicts, thumb-nail differential diagnosis of psychiatric disorders, potential suicides, and other pertinent subjects. Students of psychiatry and medical students generally find this book to be a highly practical source of effective procedure. "Practical, useful and interesting."—*Northwest Medicine*.

370 Pages. \$7.00

Washington
Square

LEA & FEBIGER

Philadelphia 6
Pennsylvania

FEBRUARY 1956, VOL. 31, NO. 2

XIII

From MOSBY Press!

Speed-Knight 1956 Ed.

"CAMPBELL'S OPERATIVE ORTHOPEDICS"

Detailed in its coverage and especially well illustrated this work fully discusses affections of joints, bones (including fractures), muscles, tendons, ligaments, and bursae. A comprehensive discussion is also given on disturbances of the neuromuscular system. This new edition contains 26 chapters, including a new section on "Surgical Physiology," by Dr. James D. Hardy.

Editor: J. S. SPEED, Associate Editor: ROBERT A. KNIGHT, M.D. Memphis, Tenn.
3rd (1956) Edition. Two Volumes, 2200 pages, 1223 illustrations. Price \$40.00. Two color. Ready February 20th.

Gradwohl 1956 Ed.

"CLINICAL LABORATORY METHODS AND DIAGNOSIS"

Here in two volumes is complete coverage of laboratory procedures. The aim of this edition is to furnish laboratory technicians, physicians, and pathologists with the last word on the technique and interpretation of laboratory procedures. Every section of the book underwent changes—with considerable rearrangement of material. Much new material has been added, especially the latest tests.

By R. B. H. GRADWOHL, M.D., D.Sc., Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique. 5th (1956) Edition. Two Volumes, 2451 pages, 765 illustrations. Price \$38.50. Ready February 15th.

Meakins 1956 Ed.

"THE PRACTICE OF MEDICINE"

This revision is the work of 23 contributors and collaborators, each one handling some phase of the subject for which he is particularly gifted. Through this means the book has been materially strengthened and made more practical. It now reflects the best in thought in the various areas of medicine garnered from the widest possible areas of the country. Those symptoms that bring the patient to the doctor are discussed as to cause and significance.

Edited by JONATHAN CAMPBELL MEAKINS, Formerly Professor of Medicine and Director of the Department of Medicine, McGill University. 6th (1956) Edition. 1850 (Est.) pages. In Preparation.

Sutton 1956 Ed.

"DISEASES OF THE SKIN"

This text has been rewritten and modernized to accord with medical literature. It is comprehensive, yet condensed. It aims primarily at usefulness. The illustrations, 1973 in number, are at atlas wherein all ordinary and many extraordinary dermatoses may be identified. The book includes features of a dictionary and an encyclopedia. It is a guide to the maze of what may be found, if one knows where to look, in an extensive medical library.

By RICHARD L. SUTTON, JR., A.M., M.D., F.R.S. (Edinburgh), Kansas City, Mo. Chairman of the Department of Dermatology, University of Kansas Medical Center. Eleventh (1956) Edition. 1600 pages, 1973 illustrations. In Preparation.

PUBLISHED BY

THE C. V. MOSBY COMPANY

3207 Washington Blvd., St. Louis 3, Missouri

The History of Medical Education —

A New Series

Introduction

ERWIN H. ACKERKNECHT

INTEREST in the history of medical education has for a long time been much stronger in the U.S.A. than in European countries. This is not surprising in view of the fact that in the U. S. some very decisive events in the history of medical education have taken place in the lifetime of most older medical educators—and it is a widespread feeling that some equally decisive events will take place in the lifetime of the younger generation of medical educators. It is therefore no accident that this Journal has carried repeatedly historical articles in the past and that several members of its Editorial Board have been actively engaged in elucidating certain aspects of the history of medical education. Both events reflect the conviction that historical analysis can play a positive role in understanding the present and shaping the future of medical education.

In considering a program of reprinting certain meaningful docu-

ments from the history of medical education, the Editorial Board felt that it might be useful to develop a more systematic program for historical contributions in the Journal, and on February 5, 1955 it placed the undersigned in charge of developing such a program. After consulting with several of my colleagues who are particularly interested in this facet of medical history* I have submitted such a program to the Editorial Board and obtained its approval.

This program does not mean that from now on the Journal will be swamped by historical articles. It does mean that such articles will appear at regular intervals; will be, if possible, written by the best authorities available on the particular subject, and will eventually give a reasonably complete picture of the

*I would like to express at this occasion my sincere thanks to Dr. A. M. Chesney, Dr. Genevieve Miller, Dr. W. F. Norwood, Dr. G. Rosen, Dr. R. H. Shryock and Dr. O. Temkin for their generous help and advice in the preparation of the program.

Dr. Ackerknecht is professor, department of history of medicine, University of Wisconsin Medical School, and consultant to the Editorial Board of the AAMC.

problems which medical education has faced in the United States in the past and the solutions it has adopted. Insofar as European models have played a role in these developments, they too will be discussed shortly. For technical reasons it will not be possible to always present contributions in chronological order, but it is hoped that we will eventually be able to present them in such order in a separate volume.

The program will try to be as elastic and manysided as possible. It will consist not only of a series of chronological articles and of reprints of important documents, but will envisage also regional studies and studies on prominent individuals or

institutions, and on special problems like the economic history of medical education in the United States. We welcome criticism and suggestions.

In inaugurating this series I do not want to elaborate on my sincere conviction that an appropriate analysis of history, without performing miracles, can help the medical educator to understand and solve his problems. Those who share my opinion, will not need such exercises. Those who do not will probably not be convinced by abstract reasoning. The proof of the pudding is in the eating. I hope and trust that this series will offer such proof and render those services for which it is intended.

Medical Education in the American Colonies

GENEVIEVE MILLER

THE CHARACTER of medical education in any period of history depends upon a complex network of predetermining factors partly of non-medical origin. The structure of society with its predominant interests is just as significant as the contemporary state of medical knowledge or the prevailing diseases. The nature of the healers from whom medical aid is sought reflects the pivotal bases of security to which people cling when in trouble. If a society places its greatest confidence in religion, as in the Western European

Middle Ages, supernatural aid will be sought chiefly and the medical personnel will be primarily clerical; in a more secular age such as ours men tend to rely upon the constructions of their intellect and entrust their healing activities to those who are imbued with such knowledge. The kind of training which evolves is an immediate indication not only of this primary orientation of society, whether religious or secular, but also of other elements such as its economic status, quantitative aspects, major health hazards, and its philosophy of health and disease.

The colonization of America occurred at a time when Western

Dr. Miller is assistant professor of medical history, Western Reserve University School of Medicine, and research associate of the Cleveland Medical Library.

European society was undergoing a metamorphosis. Columbus sailed to the West Indies at the height of the Renaissance before Luther, Zwingli or Calvin had begun their mission; lingering aftermaths of the Reformation were bringing religious refugees to the shores of the New World as late as the eighteenth century when the colonial period came to an end. The expanding commerce which sought new products overseas and stimulated colonial settlement in turn generated business conditions which eventually strained the ties between colony and mother country through rival economies. Concurrent with the discovery of new lands, with these religious and economic changes, a new world of nature was being explored. After the recovery of the best thought of antiquity, uncorrupted texts of classical authors, men learned to look at nature not only as the Greeks had done, but what was more important, to see it with their own eyes. The discovery and colonization of the New World ran parallel with and was analogous to the discovery and exploration of the whole realm of natural phenomena. There was a reciprocal reaction between the two which molded the character of early modern times in all its cultural manifestations.

While increments were being made in medical knowledge during this period, of which the names of Vesalius, Paré, Paracelsus, Harvey, Sydenham and Malpighi will serve as conspicuous reminders, the genuine revolution in medicine did not occur until after the American colonial period. Therefore no incisive changes occurred in either the theory or practice of medicine which modified the art or the methods by which it was taught. The new worlds of anatomy and botany revealed by Vesalius and Fuchs, or of physiology

presaged by Harvey, demanded several centuries of increasingly precise observation and the concurrent development of ancillary sciences like physics and chemistry before any fundamental insights into human biology could be secured and fruitful application made. Therefore, regardless of shifting fashions of theory, in the colonial period any change which might be detected in medical education arose less from the internal growth of medical science and more from external factors such as the philosophy of education in general, from the demands of the social group, or the contingencies of the environment.

Colonial Healers

When permanent settlement began along the Atlantic seaboard in the early 17th century the type of healer was determined largely by the character of the colony. For commercial undertakings such as the London Company at Jamestown, the Dutch West India Company at New Amsterdam, or the Swedish West India Company along the Delaware provision was made by the companies for the medical care of their colonists, usually through a contract with a salaried surgeon or apothecary who was hired to serve the colony for a specified period. The Massachusetts Bay Company likewise employed company doctors to care for its sick in the beginning, but the theological predisposition of the New England settlers inclined them towards their religious leaders for medical guidance also. Deacon Samuel Fuller attended the original Mayflower group at Plymouth and served as medical consultant until his death in 1632. The Reverend Thomas Thacher of the old South Church in Boston issued the first printed med-

ical document in the British colonies in order to aid his fellow townsmen during a smallpox epidemic in the winter of 1677-78, while the Mathers, Increase and Cotton, took the initiative in introducing smallpox inoculation to Boston a generation later.

In most instances in the earliest days of colonization the "comforters for the sick," as the Dutch designated them, were not university graduates holding the degree of doctor of medicine. The company surgeons were invariably trained by the apprenticeship method which had evolved in the Middle Ages to teach crafts of all kinds by practical experience, and the clerical advisers had usually "read" medicine as part of their general university education preparing them for the ministry. Their knowledge of Greek and especially Latin, the universal language of scholarship including medicine, made classical medical authors accessible to them and the libraries of university graduates of whatever faculty usually contained medical works. John Winthrop Jr., the first governor of Connecticut who had graduated from Dublin, was frequently sought for a sort of medical aid which was not uncommon—prescriptions and advice for maladies described in letters.

University-trained medical graduates were the exception, and the sparseness of population at first made their profession economically unsound. Even after a hundred years of colonization in Virginia Adam Cunningham, a young Scotsman with medical training, could not make a living among the planters. At Williamsburg and its environs in 1730 he reported no fewer than 25 to 30 physicians for a population of at most sixty families, and of these only two lived well. Travelling in other parts of Maryland and Virginia he found that the country was either amply

supplied with medical help or else was too poor to support a doctor. He noted that all of the successful practitioners had made their fortune by becoming merchants in addition.¹ Others like Dr. Johannes La Montagne, a Leyden graduate who settled in New Amsterdam and became a member of the Governor's Council, played an active role in politics, just as Cadwallader Colden with an Edinburgh M.D. abandoned his medical practice in New York for politics in 1720.²

Poor Standards

The plenitude of "phisitions" reported by Cunningham in 1730 symptomized the lax standards of colonial medical practice. In newly created communities blatant abuse of medical prerogatives and especially of fees eventually led to legislative regulation, and in some colonies like Connecticut and Rhode Island licenses to practice were issued by the General Courts. Put there were no adequate provisions for examining the qualifications of even those who were officially licensed and by the beginning of the 18th century public confidence in the homebred practitioners was waning. Some educated colonists preferred to write to England for medical advice, and European trained physicians who migrated to the colonies found much to criticize. Visiting Albany in 1744 Dr. Alexander Hamilton of Annapolis found that the doctors were "all empirics, having no knowledge of learning but what they have acquired by

1. WHITFIELD J. BELL, JR.: "Dr. Adam Cunningham: Physick and Traffick in Old Virginia," *Bull. Cleveland Med. Library*, 1954, I, 67-69.

2. WILLIAM F. NORWOOD: *Medical Education in the United States before the Civil War* (Philadelphia, 1944), p. 16.

bare experience. They study chiefly the virtues of herbs, and the woods there furnish their shops with all the pharmacy they use. A great many of them take the care of a family for the value of a Dutch dollar a year, which makes the practise of physick a mean thing and unworthy of the application of a gentleman. The doctors here are all barbers."³

Apprenticeship

The only form of medical education available in the British colonies until late in the colonial period was that of apprenticeship. A favored few returned to Europe for a university education, but many of these never came back. Besides there was little inducement to undergo the 11-year medical curriculum prescribed by a university like Cambridge for a diploma which possessed prestige value primarily. Much more practical was the system of learning as an apprentice to a local practitioner who took young boys into his home for a number of years, usually from five to seven, to perform the multiple duties of student and servant. In exchange for food, clothing and shelter, the apprentice tended the doctor's shop, mixed prescriptions, read books in his preceptor's library and accompanied him on his calls. Legal indentures bound the medical student to his preceptor in the same manner as craftsmen of all sorts were bound to their masters. Apprenticeship was the universal form of vocational training in colonial times for craftsmen and gentlemen alike, producing merchants, solicitors, physicians and surgeons as well as tallow-chandlers,

bricklayers and other "mechanics." The form of such a contract is illustrated in the following unusually detailed indenture drawn up in 1734 in Marlboro, Massachusetts:

"*This Indenture Witnesseth*, That Hollister Baker, a minor, aged about sixteen, son of Mr. Edm'd Baker, late of Marlborough, in the County of Middlesex, gent. deceased. Of his own free will and accord and with the consent of Benj'n Woods, of Marlborough, in county aforesaid his guardian, doeth put and bind himself to be an apprentice unto Benj'n Gott, in the county aforesaid, physician, to learn his art, trade, or mystery, and with him the said Benj'n Gott, after the manner of an apprentice to dwell and serve from the day of the date hereof, for and during the full and just term of five years and four months next ensuing, and fully to be compleat and ended. During all which said term the said apprentice his said master and mistress honestly and faithfully shall serve; their secrets keep close; their lawful and reasonable commands everywhere gladly do and perform. Damage to his said master and mistress he shall not willfully do; his master's goods he shall not waste, embezel, purloin or lend unto others, nor suffer the same to be wasted or purloined: but to his power shall forthwith discover and make known the same to his said master and mistress.

"Taverns nor alehouses he shall not frequent, or cards or dice, or any other unlawful games he shall not play. Fornication he shall not commit, nor matrimony contract with any person during said term. From his master's service he shall not at any time unlawfully absent himself, but in all things as a good, honest and faithful servant and apprentice shall bear and behave himself towards his said master during the full term of five years and four months, commencing as aforesaid.

"And the said Benj'n Gott for himself doeth covenant, promise, grant and agree unto and with his said apprentice in manner and

3. *Gentleman's Progress. The Itinerary of Dr. Alexander Hamilton 1744.* Edited with an Introduction by Carl Bridenbaugh (Chapel Hill, 1948), pp. 65-66.

form following, that is to say, that he will teach the said apprentice, or cause him to be taught by the best ways and means that he may or can the trade, art or mystery of a physician, according to his own best skill and judgment (if the said apprentice be capable to learn), and will find and provide for and unto said apprentice good and sufficient meat, drink, washing and lodging during said term, both in sickness and in health; his mother all said term finding said apprentice all his clothing, of all sorts, fitting for an apprentice during said term; and at the end of said term to dismiss said apprentice with good skill in arithmetic, Latin, and also in the Greek grammar.

"In testimony whereof, the said parties to these present indentures have interchangeably set their hands and seals the eighth day of January, in the fourth year of the reign of our Sovereign, Lord George ye Second, by the Grace of God, of Great Britain, France, and Ireland, and in the year of our Lord one thousand seven hundred and thirty-three-four.

"Hollister Baker. (Seal.)

"Benj'n Woods. (Seal.)

"Benj'n Gott. (Seal.)

"Signed, sealed and delivered in the presence of

"John Mead.

"Elizabeth Woods."⁴

In the late colonial period the status of a servant was usually replaced by the payment of an annual fee amounting to approximately one hundred dollars. In such a case the student was not required to live at his preceptor's home.⁵

Prescriptions

Although certain standard drugs were sold at apothecary shops in the larger towns, colonial physicians fre-

quently had to prepare many of their own, as the homeland was far away and imported drugs were very expensive. The apprentices were particularly useful in gathering and compounding herbs, barks, roots and other substances. The diary of young Alexander Anderson, later renowned as an engraver, who was a medical apprentice in New York in 1795 tells of making a syrup of licorice root and of searching for yellow dock root, valuable for treating the itch, which he found "in a lot near the Battery."⁶ Many physicians grew ordinary medicinal plants in their own gardens, one of the most famous of which was that of Dr. Gustavus Richard Brown (1747-1804) of Southern Maryland, which occupied 10 acres and contained plants from all over the world. The colonial physician's shop must have presented an impressive array of pewter gallipots, syrup bottles and unguent pots, in addition to the apparatus for preparing prescriptions such as mortars and pestles, balances, flasks and alembics for distillations.

Dissections

It is doubtful whether many medical apprentices in early colonial times performed or witnessed a dissection. Legal provision was made in the Massachusetts colony in 1647 that students of medicine or surgery "may have liberty to read anatomy & to anatomize once in foure yeares some malefactor in case there be such as the Courts shall allow of,"⁷ but with such an uncertain supply there would be little opportunity. Autopsies of persons who died from mysterious

4. Other sample indentures are given in GENEVIEVE MILLER: "Medical Apprenticeship in the American Colonies," *Ciba Symposia*, 1947, VIII, 506-9.

5. NORWOOD, *op. cit.*, pp. 32ff.

6. Passages extracted in MILLER *op. cit.*, 502.

7. F. R. PACKARD: "History of Medicine in the United States," (New York, 1931,) I. pp. 25-26.

causes were commonly performed in all the colonies. As the jury usually contained several laymen as well as the surgeon, the value of the procedure may be questioned and educational activities dismissed as negligible. In the early colonial period even in Europe anatomy was still largely extracurricular. In spite of the great advances by individuals like Glisson, Steno, Wirsung, Willis, Vieussens and Ruysch, the universities seldom made adequate provision for dissection. It was only in the 18th century that chairs of anatomy were created in British universities. Even if there had been an easy access to material for dissection in the colonies, the average preceptor would probably not have had sufficient interest, not to mention skill, to teach his apprentices much more than the skeleton.

Medical Preceptors

The apprenticeship method, which began in the earliest days of settlement when the company surgeons were instructed to teach their art to youths of the colony so that medical care would continue after their period of service was over, survived until well into the 19th century. With an able well-educated preceptor it could be very effective, and even after institutionalized education began in the colonies it was still a required part of the student's training in order to gain practical experience. By the beginning of the 18th century when the growing prosperity of the colonies made migration more attractive and larger numbers of professional people crossed the ocean to seek their fortune, their ranks included well-educated physicians with university degrees who soon established themselves as leaders of their communities. Some of them became

the medical preceptors of local youths and served to elevate the depressed standards of practice. A number of them were Scotsmen like Dr. Alexander Hamilton of Annapolis or Dr. Gustavus Brown Sr., who established himself in Southern Maryland in 1708 and created a medical dynasty which served that region as practitioners and preceptors for a century, or Dr. William Hunter of Newport, R. I., a refugee from the Battle of Culloden in 1745 when the Stuart supporters were decisively defeated. Probably the most influential immigrant preceptor was Dr. John Kearsley Sr., who came to Philadelphia from England in 1711 and trained the leaders of Philadelphia medicine of the next generation. Among his pupils were William Shippen Sr. and John Bard, both fathers of professors in the first two colonial medical schools in Philadelphia and New York, and John Redman who in turn had well-known physicians like John Morgan, Benjamin Rush and Caspar Wistar as house pupils. Rush's description in his *Memorial* of his student days with Redman are illuminating:

"In the month of February 1761, I began the study of medicine, and continued constantly in my master's family and shop 'till July 1766. During this period I was absent from his business but eleven days, and never spent more than three evenings out of his house. My master at this time was in the most extensive business of any physician in the city, and as he had at no time more than two apprentices, he kept them constantly employed. In addition to preparing and compounding medicines, visiting the sick and performing many little offices of a nurse to them, I took the exclusive charge of his books and accounts. It may not be amiss to mention here that before I began the study of medicine, I had an uncommon aversion to such sights as are con-

nected with its practice. But a little time and habit soon wore away all that degree of sensibility which is painful, and enabled me to see and even assist with composure in performing the most severe operations in surgery. The confinement and restraint which were now imposed upon me gave me no alternative, but business and study, both of which became in a short time agreeable to me. I read in the intervals of business and at late and early hours all the books in medicine that were put into my hands by my master, or that I could borrow from other students of medicine in the city. I studied Dr. Boerhaave's lectures upon physiology and pathology with the closest attention, and abridged a considerable part of Van Swieten's commentaries upon his practical aphorisms. I kept a common place book in which I recorded everything that I thought curious or valuable in my reading and in my master's practice. To him I am indebted for the estimation in which I have always held the works of Dr. Sydenham. He put them into my hands soon after I went into his shop, and frequently alluded to his opinions and practice, particularly in the treatment of epidemics. However laborious and self-denied my situation was during my apprenticeship, I owe much to it. It produced in me habits of industry and business which have never left me. It rendered diseases in all their forms and symptoms familiar to me, and gave me a facility in knowing them which is to be acquired in no other way. During my residence in Dr. Redman's shop, he was one of the physicians of the Pennsylvania Hospital by which means I was admitted to see the practice of five other physicians besides his own in the hospital."⁸

After the beginning of the 18th century some students began their studies with a preceptor at home and then went abroad for additional training. The need which was increasingly felt for intensive firsthand experience with both the living

and dead body had added new dimensions to the curriculum. Formerly anatomy was learned chiefly from books and an occasional dissection might have been witnessed, but in the 18th century a conscientious medical student wanted to hear lectures and even carry out dissections himself under the aegis of an able teacher like Cheselden, the London surgeon, or the famous Hunter brothers. Such teaching was entirely private in nature and did not confer any degree. One of the first colonials to complete his education in this way was Thomas Bulfinch of Boston who was a house pupil of Dr. Zabdiel Boylston of smallpox inoculation fame before going to London to study anatomy and surgery with Cheselden, whose American students in the 1720's included also Sylvester Gardiner of Rhode Island and Thomas Cadwalader of Philadelphia. Others like Thomas Bond, the founder of the Pennsylvania Hospital who had been apprenticed to Dr. Alexander Hamilton, "walked the wards" of the Hôtel-Dieu in Paris, famous for its surgeons. After returning home they frequently gave private lessons of their own to medical students or local practitioners. The 22-year-old Thomas Cadwalader gave anatomical demonstrations for the benefit of older colleagues when he returned to Philadelphia around 1730, and after the middle of the century there was an increasing number of such courses offered in the larger towns. They were frequently advertised in the newspapers and were open to the general public. While a public course of lectures on anatomy would probably attract only the morbidly curious today, in the Age of Enlight-

8. "A Memorial Containing Travels through Life or Sundry Incidents in the Life of Dr. Benjamin Rush" (1905).

enment there was an avid interest in all subjects of science. Curiosity about the human frame was one aspect of the current fashion which drew the intelligentsia to public lectures on the new electrical wonders, the mysterious effect of chemical combinations and other marvels of nature which were being revealed daily.

The Hospital's Role

Just in this period also the hospital began to assume its important role in medical education. In the 17th century the versatile genius Sir William Petty, one of the founders of the Royal Society, expressed his opinion that one of the main reasons for the lack of progress in the science of medicine was the absence of hospitals where physicians could study a large number of clinical cases: "A man shall learn in a well regulated hospital, where he may within halfe a hower's time observe his choice of 1000 patients, more in one yeare then in ten without it, even by reading the best Books that can be written. For as one may learn to know and distinguish a face better by one minut's Inspection then by reading ten sheets of paper in the description of it, So wee may learn more of sick people by the Joynt assistance of all our sences together then by the lame descriptions of words alone."⁹ Such a view became increasingly common, and when the growing philanthropy of the 18th century stimulated the creation of public infirmaries and hospitals, promoters frequently pointed out the benefits which would derive from the opportunity they would afford "for advancing and confirming

the several Branches of the useful Art of Medicine" through the larger scope for observation.¹⁰

When young Americans visited London or Paris it became customary for them to walk the wards of hospitals like Guy's or St. Thomas's or l'Hôtel-Dieu in order to view diseases with which they were unfamiliar and to learn new methods of treatment. When the first permanent hospital of the colonies, the Pennsylvania Hospital, was created at Philadelphia in 1751, it was taken for granted that it would participate in medical education. As Rush mentioned in his description of his apprenticeship, the attending physicians brought their office pupils to observe cases as well as dress wounds and similar duties. In time permission was granted to other students to observe hospital practice upon payment of a fee, and eventually a hospital apprenticeship lasting five years was developed.

Edinburgh Medical School

Early in the 18th century continental universities like Leyden and Rheims attracted the few colonials who sought the M.D. degree, rather than Oxford or Cambridge which still clung to a lengthy classical curriculum. Under the great clinician Boerhaave and the anatomist Albinus, Leyden had assumed the leadership in university medical education through its progressive course of study embodying the most recent scientific developments. But by mid-century by far the most popular university among Americans was Edinburgh, the spiritual offspring of Ley-

9. "The Petty Papers," edited by the Marquis of Lansdowne (London, 1927), II, pp. 175-76.

10. ISAAC MADDOK: "A Sermon Preach'd before the Trustees of the Publick Infirmery in James-Street, Westminster May 10, 1739" (London, 1739), p. 17.

den, where a new and more practical type of medical education had evolved which was adapted to the needs of contemporary thought and practice. The advice which Dr. Samuel Johnson gave to Arthur Lee of Virginia who subsequently matriculated at Edinburgh points out the shift which was occurring:

"Therefore if you have a large fortune and time enough to spare, go to either of these [Oxford or Cambridge which required a 7 year M.A. degree as pre-medical requirement]. If you would choose immediately to enter upon Physic and to attain sufficient knowledge therein to carry you through life, at a small expense and in a short time, by all means go to Edinburgh or Leyden; for the Scotch or foreign education is like a house built to last a man's lifetime only; the English is like a Palace or Fortress intended to last for many ages. The first build lightly, the last lay a very strong and firm foundation before they begin the work."¹¹

The creation of a Faculty of Medicine at the University of Edinburgh in 1726 provided the opportunity to initiate a new pattern of medical education expressing the philosophical and scientific ideals of the age. Unencumbered by the trappings of mediaeval tradition, for it had not been founded until 1583, Edinburgh promulgated the results of the scientific revolution not only in its curriculum but also in its teaching methods. The new emphasis on the acquisition of useful knowledge for "the relief of man's estate" as formulated philosophically by Sir Francis Bacon and

as incorporated spiritually in a group like the Royal Society of London had been ignored at first by the older universities, still clinging to their scholastic disputations and suspicious of novelty. Leyden was one of the few exceptions, where the powerful Boerhaave, a fervid disciple of the new scientific movement, performed the dual task of creating a new medical synthesis embodying the most advanced physico-chemical knowledge and of stressing the new methods of acquiring knowledge such as more acute observation, experimentation and the application of mathematics whenever possible. His institution of clinical teaching as a regular part of the curriculum had had its prototype at Padua, but Boerhaave made it an essential part of university medical training. At Edinburgh the influence of his teaching pervaded the school through teachers who had studied under him, and his books were adopted as texts. In contact with brilliant scientists like Joseph Black the chemist who discovered the phenomenon of latent heat, Robert Whytt who did pioneering experimental work on the nervous system, the Monro anatomical dynasty, or the great teacher William Cullen, students were given systematic courses on anatomy, chemistry, theory and practice of medicine, materia medica and botany, with ample opportunities for anatomical dissection and clinical observation. The course was streamlined to make it economically feasible and yet allow sufficient instruction. Regulations adopted in 1783 fixed the minimum course requirement at three years, at least one of which must have been spent at Edinburgh. Students flocked there from continental Europe as well as the British Isles and their overseas dependencies. The first American to receive a degree was

11. "Early Letters of Arthur Lee," *Southern Literary Messenger*, 1859, XXIX, 62-63, quoted in WHITFIELD J. BELL JR., "Medical Students and Their Examiners in Eighteenth Century America," *Transactions & Studies of The College of Physicians of Philadelphia*, 4 Ser., 1953, XXI, 14.

John Moultrie of South Carolina in 1749; by 1800 114 had crossed the sea to earn their M.D. in the "Athens of the North."¹²

John Morgan

In the spring of 1760 young John Morgan of Philadelphia sailed to Britain to complete his medical education. The son of a wealthy merchant who was a friend of Benjamin Franklin then living in London as agent for Pennsylvania, Morgan had had the best education available in the colony. At the age of 15, after completing his classical studies, he became a medical apprentice to Dr. John Redman for six years, the last 13 months of which he served as resident apothecary to the Pennsylvania Hospital. Simultaneously he enrolled with advanced standing in the newly created College of Philadelphia and was a member of the first class to receive the A.B. degree in 1757.

The college, the first school of higher learning in Pennsylvania, had been Franklin's creation. In contrast with the older colleges of the other colonies which had been founded principally to teach theologians, it was more concerned with the cultivation of "useful learning." Its curriculum was similar in many ways to that being developed contemporaneously by the Dissenters' schools which had arisen in England to train the youth of nonconformists barred from Anglican universities. For the first time the English language was given as important a place in the curriculum as Latin and Greek, and subjects like mathematics and geography which would be of practical help to one's business or trade were included. Also new courses in scientific subjects like

physics or astronomy were offered. Such a school incorporated the most advanced ideas on education of the day.

After obtaining his A.B. degree and completing his medical apprenticeship, Morgan served briefly as an army surgeon during the French and Indian War and then decided to complete his studies abroad. Going first to London where he was widely introduced into intellectual circles by Franklin, he visited hospitals and attended William Hunter's anatomical lectures. He was befriended by Dr. John Fothergill, a prominent Quaker physician who took a great interest in the young colonials visiting London. The following year, in 1761, Morgan went north to Edinburgh and enrolled as a candidate for the M.D. degree which he achieved in 1763.

A fellow Philadelphian and friend who was just completing his Edinburgh studies when he arrived was William Shippen Jr., a graduate of the College of New Jersey (Princeton) who had studied medicine with his father before going abroad. When he returned home in 1762 he brought with him a number of gypsum casts and crayon anatomical drawings sent by Dr. Fothergill as a gift for the Pennsylvania Hospital. The accompanying letter from Fothergill stated:

"I need not tell thee that the knowledge of Anatomy is of exceeding great use to practitioners in Physic and Surgery, and that the means of procuring subjects with you are not easy; some pretty accurate anatomical drawings, about half as big as the life, have fallen into my hands, which I propose to send to your Hospital to be under the care of the Physicians, and to be by some of them explained to the students and pupils who may attend the Hospital. In the want of real subjects

12. BELL, *op. cit.*, p. 15.

these will have their use, and I have recommended it to Dr. Shippen to give a Course of Anatomical Lectures to such as may attend. He is very well qualified for the subject, and will soon be followed by an able assistant. Dr Morgan, both of whom, I apprehend, will not only be useful to the Province in their employments, but if suitably countenanced by the Legislature, will be able to erect a School of Physic amongst you, that may draw students from various parts of America and the West Indies, and at least furnish them with a better idea of the rudiments of their Profession, than they have at present the means of acquiring on your side of the water."¹³

Thus the idea for creating a medical school in Philadelphia was born and was common knowledge among the Americans at Edinburgh. Young Samuel Bard of New York wrote to his father in December 1762 that he wished Shippen and Morgan were at New York, so that he could assist in founding it.¹⁴

While Shippen was initiating his courses in anatomy and midwifery at Philadelphia, Morgan completed his Edinburgh studies and went to Paris to hear M. Sue's anatomy lectures. Concluding his European sojourn with the "Grand Tour" of continental cultural centers he paid his respects to celebrities like Voltaire and Morgagni and took a course in classical archaeology at Rome. All the while he brooded over plans for the medical college. While in Paris in 1764 he composed a lengthy manuscript precisely formulating curricular details for presentation to possible sponsors

like the Hon. Thomas Penn, proprietor of Pennsylvania, whom he approached early in 1765. One of his proposals was that the school should be part of the College of Philadelphia (now the University of Pennsylvania). Penn heartily endorsed the project and on February 15, 1765 wrote to the Trustees of the College to that effect, recommending that Morgan be appointed professor.¹⁵ At a special meeting of the Trustees on May 3, 1765 shortly after Morgan returned to Philadelphia armed with other eminent recommendations, he was unanimously appointed professor of the theory and practice of medicine and asked to deliver an address at the next college commencement. May 30, the day appointed, was very hot, and Morgan's "Discourse upon the Institution of Medical Schools in America" was fifth on a program composed of such topics as "Whether the Planets be Inhabited?" or a syllogistic dispute "Utrum, sublato statu futuro, maneat satis firma ad virtutem obligatio?" Consequently the perspiring audience was dismissed in the midst of his speech and readjourned the following morning to hear him finish "the Remainder of his learned and elaborate Oration."

But what had happened to the part Shippen was to have played in the undertaking? It seems undeniable that Morgan, who was a very ambitious young man, had found it expedient to forget his old friend and to try to take full credit for the project. He doubtless felt guilty when he admitted in his *Discourse* that Shippen had told him that he had hinted at "a plan for giving medical lectures" in his introduction to his first anatomical lectures, but then he added: "I do not learn that he rec-

13. JOSEPH CARSON: "A History of the Medical Department of the University of Pennsylvania from its Foundation in 1765" (Philadelphia, 1869), p. 42.

14. Letter cited in J. B. LANGSTAFF, Doctor Bard of Hyde Park, (New York, 1942), p. 67.

15. CARSON, *op. cit.*, pp. 50-51.

commended at all a collegiate undertaking of this kind. What led me to it was the obvious utility that would attend it, and the desire I had of presenting, as a tribute of gratitude to my alma mater, a full and enlarged plan for the institution of medicine, in all its branches, in this seminary where I had part of my education, being amongst the first sons who shared in its public honors."¹⁶ It must have required considerable self-control for Shippen to pen a polite letter to the trustees of the college the following September asking for the chair of anatomy and surgery. He was elected unanimously.

College of Philadelphia Medical School

Late in September 1765 the *Pennsylvania Gazette* announced the new medical courses under the sponsorship of the college which were to begin in the middle of November. Dr. Shippen's course on anatomy, surgery and midwifery, for which the fee was six pistoles (approximately \$24) was to include 60 lectures; Dr. Morgan was to lecture on *materia medica*, which included botany and chemistry, three days a week at the college for three or four months for a fee of four pistoles. An additional dollar was collected from matriculants for the purchase of books for a medical library at the college. At the same time Dr. Thomas Bond was to give clinical lectures at the Pennsylvania Hospital.¹⁷

In the second year Morgan repeated his course on *materia medica* and instituted a new one of the theory and practice of physic for second-year medical students. The faculty

was completed with two other local Edinburgh graduates: Dr. Adam Kuhn was appointed professor of *materia medica* and botany in 1768, and Dr. Benjamin Rush arrived home in 1769 to fill the chair of chemistry. After two years of successful operation the trustees of the college decided unanimously to confer degrees in medicine, since such a move would "tend to put the Practice of Physic on a more respectable footing in America." The first class of 10 students received the first medical degrees conferred in an American college on June 21, 1768.

Thus Morgan's plan was realized in its entirety. With Edinburgh as his model, a medical curriculum was established which combined the basic medical sciences with clinical teaching in an academic setting where men were united for the "cultivation of useful learning [which] can only be effectually promoted under those who are patrons of science, and under the authority and direction of men incorporated for the improvement of literature."¹⁸ Situated in Philadelphia which afforded adequate clinical facilities in the Pennsylvania Hospital and an able group of local practitioners, the school set a pattern which was soon imitated in New York when Dr. Samuel Bard in 1768 assembled a medical faculty under the auspices of King's College. Very high standards both for admission and graduation were adopted. At Philadelphia candidates with a college degree preferably were admitted; if this was lacking they had to demonstrate their knowledge of Latin, mathematics, natural and experimental philosophy before being accepted. Besides the required courses in anatomy, *materia medica*, chemistry, the theory and practice of

16. JOHN MORGAN, "A Discourse upon the Institution of Medical Schools in America" (Philadelphia, 1765) pp. 34-35.

17. CARSON, *op. cit.*, pp. 57-212

18. MORGAN, *op. cit.*, p. 35.

physic, students had to take a course of clinical lectures and to attend the Pennsylvania Hospital for one year. Two medical degrees were offered: the bachelor's which required experience as an apprentice and a general knowledge of pharmacy in addition to course work, and the doctor's, obtainable no fewer than three years after the B.M. For this the candidate had to be at least 24 years old and to defend a thesis publicly.¹⁹ It was soon seen that few bothered to qualify for the M.D., and eventually the higher degree was awarded for work which had originally been designated for the B.M. and the latter abolished.

The Revolutionary War closed both medical colleges temporarily, and it

is regrettable that the fine example set by these schools and by Harvard, where a medical faculty was created in 1783, was not rigorously followed in the subsequent development of medical education in the new nation. Instead the absence of both professional and governmental enforcement of adequate standards, the growing need for more physicians for the expanding population, and the predominating commercial spirit created an environment favorable to the growth of independent proprietary schools which were the most characteristic American medical institution of the 19th century.

19. CARSON, *op. cit.*, p. 60.

A Method of Teaching Surgical Pathology

S. E. ZIFFREN, J. M. LAYTON, E. D. WARNER AND R. T. TIDRICK

THE PURPOSE OF THIS PAPER is to describe a method of presentation of surgical pathology to medical students in the junior year in such manner as to correlate clinical and pathologic changes of disease processes. This course has been conducted as a joint effort of the departments of surgery and pathology for the past four years. The course is entitled "surgical pathology," but its realm of coverage at times includes anatomy, physiology, differential diagnosis, laboratory studies, research, etc. We feel that its simplicity and the application of both pathology and clinical considerations to specific patients give a breadth of appeal which make it a very useful means of education. It provides a bridge wherein the newcomer to clinical surgery becomes aware of his great dependence on pathology which he presumably studied during his preceding sophomore year. The method of presenting this course may not be original, but we feel it deserves description and emphasis.

Method

It is conducted once a week in a room which can be darkened and which will hold the entire junior class and many visitors. These are usually

residents and staff members both from the departments of surgery and pathology. The case or cases to be discussed are picked approximately 48 hours before the class by the surgical representative. The cases are selected from those patients on whom operations have been performed during the previous week. In each instance the junior medical student who was originally assigned the patient for workup on the ward is notified that he is to present the case to the class. The diseases to be discussed are posted on the bulletin board so the entire junior class can study the subject before class and be better prepared to ask questions.

The surgical resident in pathology is instructed to present the pathologic aspects of the case. Colored lantern slides of gross findings in similar cases or diseases from the departmental teaching files are selected by him. The instructor from the department of pathology is acquainted with the subject for discussion and reviews the material to be presented with the resident in pathology prior to the conference. At the conference itself the student presents the history, physical signs, and laboratory findings and the course of the patient. The length of time allotted for presentation is restricted to not over four minutes. The room is darkened and using the projecting microscope,* the pathology resident presents the mic-

The authors are members of the departments of surgery and pathology, State University of Iowa College of Medicine.

roscopic findings and colored lantern slides of similar cases. At the same time he describes the gross findings, pointing out any pertinent notes.

The instructor from pathology then discusses the subject from the standpoint of both pathologic anatomy and pathologic physiology. He frequently suggests reading references or other sources of information. Following this, the surgeon discusses the clinical findings, method of therapy, prognosis, etc. He then calls for any questions from the students which are answered either by himself or the pathologist and asks for comments from any members of the two departments who are present. The statements of these persons may differ from those of the instructors and lively discussions may ensue. At times, other interested parties such as the bacteriologist, laboratory technician, etc. are asked to participate.

During the course of the year, approximately three written examinations are given, which may cover any phase of the disease processes presented in the class. A microscopic slide examination is also conducted at the end of the year.

Subjects

During the past year, the following subjects were covered:

Acute appendicitis
Acute cholecystitis
Chronic cholecystitis and cholelithiasis
Gas gangrene
Tuberculosis of the lung
Tuberculoma of the lung
Diverticulitis
Bronchiectasis
Cystic disease of the lung
Ulcerative colitis
Duodenal ulcer

Gastric ulcer
Nodular goiter
Grave's disease
Thyroiditis
Thyroglossal duct cyst
Hirschsprung's disease
Hemorrhoids
Hypersplenism
Portal hypertension
Coarctation of aorta
Mixed tumor of the salivary gland
Pheochromocytoma
Giant cell tumor
Marjolin's ulcer
Cystic disease of the breast
Fibrosarcoma
Carcinoma of the colon and rectum
Carcinoma of the breast
Carcinoma of the thyroid
Carcinoma of the lip
Carcinoma of the esophagus
Carcinoma of the lung
Carcinoma of the stomach
Nevi and malignant melanoma
Malignant lymphoma

The class is informal but informative and involves the participation of the student. Its purpose is to round out the student's approach to a subject so that he has an understanding of how the gross and microscopic picture of a disease correlates with the symptoms, signs and course of the disease. It also gives him insight into problems in the management of the disease. The responsibility rests on the two instructors, the one from surgery and the other from pathology, to see that the subject matter is presented in an organized fashion and that it is presented vividly and covers the subject thoroughly. It proves a valuable teaching exercise for the student presenting the case history and also for the resident in pathology who learns to describe what he sees. This class, of course, does not constitute a substitute for a clinic nor for fundamental grounding in pathology in the sophomore year.

*Scopicon. Mfg. by Scopicon, Inc., Chauncey, N. Y.

The Rise and Fall of the Correlated Clinical Courses at Iowa

WILLIAM B. BEAN

RESEARCH IN BASIC medical sciences has its well established code and rituals. Clinical investigation is now well out of its long and troubled adolescence. Still, we have had no notable example of the experimental method applied to the evaluation of teaching the undergraduate medical student. Perhaps this is because the subject is one of almost hopeless complexity and profound, indeed at times overwhelming, difficulty. A major reason for this state of affairs is the lack of general agreement about what a good doctor should be. Each specialist has his obvious bias of judgment and interpretation; and the general physician has his own private bias. These are sliced in opposite directions in the comparison between group practice and solo practice; between academic medicine and the practice of medicine; and between basic science and the clinical fields of medicine. As the subdivisions continue, each individual conceives himself an expert in understanding the methods of making of physicians, supposing himself to know more than those who have devoted their life to the subject¹. This is the great hazard of specialization, that specialists have the false notion that their skills are valid and their ideas sound in other fields. No one has evaluated the problem of medical teaching methods in an independent, objective, scientific study.

Dr. Bean is professor of internal medicine at the State University of Iowa College of Medicine.

Other Difficulties

As if these troubles were not enough, we have grave difficulties which complicate the problem. First, the unmeasurable variables in individual capacity haunt anyone who would like to divide classes into a test group and a control group. Next, in the nature of the mixed matrix of medical training and education, substantial but unmeasured teaching goes on amongst classmates, and students of different classes. Usually but not always this is from senior to junior to sophomore to freshman. Then there are the varied talents and training of a numerous corps of teachers whose individual skills range widely and in whom there is an appreciable variability in day-by-day performance. Self-evaluation, catechism by committees, a review of teaching capacities within departments and within medical schools have to be judged against criteria which are inexact and uncertain².

One neglected aspect of all radical changes in curriculum and of experiments in didactic medicine has been the fact that to have an innovation requires innovators. Innovators in general are young, mentally always and usually in years. They have not only strong personalities but the courage of their convictions. They are leaders. The neglected and probably unmeasurable variable here is that such people are stimulating persons and stimulating teachers. What cannot be controlled is how stimulat-

ing they might have been under slightly or radically different curricular arrangements. Might they not have done just as well under older rubrics? While individual innovators disclaim any strong personal role in changes they believe occur with alterations in curriculum, the fact remains that such alterations are part of the complex of the particular program only as it is put into practice by those who provide the stimulus and indeed, do the footwork. It is much more important for a faculty to be willing to try innovations than that the innovations follow a particular pattern. Change itself is a measure of youthful spirit though its objective is for the future. Each generation of teachers in fact aims to solve problems which were a major source of difficulty for the previous generation. They may no longer exist, or they may have a different emphasis and urgency. We need to look forward to plan our teaching program for the practice of the future. The emphasis on feedback mechanisms is still back.

Experiment Begins

An experiment in the coordination of clinical teaching was undertaken at the State University of Iowa in the fall of 1940. It was reported in detail by Greene³ in the May 1945 issue of *MEDICAL EDUCATION*. This program was launched for several reasons. There was discontent with the previous system and the thought that the curriculum was too fixed, encased as it was in rigid departmentalization. Much overlapping occurred in course content without general knowledge of its extent. A committee studied the situation and proposed that "the clinical subjects be coordinated and presented in sequence by the various departments." This

was to follow the didactic work in the basic sciences. The program encompassed the last trimester of the second year and the whole of the third year. The whole didactic course in internal medicine, surgery, gynecology were included, and varying portions of the courses in the other clinical specialties. This program was aimed to reduce duplication, conserve teaching time, gain simultaneity of presentation of subject material by members of the clinical specialties, illuminate and discuss real differences of opinion, quash rumor of others and emphasize subject matter rather than department. To a large extent these aims were achieved. But shortly after the end of World War II the program was abandoned, as was an abortive attempt to provide an intensive two-week period of pre-view-review correlation at the transition between preclinical and clinical studies.

Program Superseded

Why was this program, with honorable intentions and admirable objectives superseded? These are my impressions of the reasons. I arrived on the scene only in time to witness its death and help arrange decent burial. The reasons are set forth without an effort to judge their relative importance.

1. There was a radical change in plan for consultation practice^{2, 3}. The monopoly of the department head in private practice, and of the rest of the department staff in teaching and research, was broken. The junior members of all clinical departments became partners in fact and had more say in planning the curriculum. They wanted to try their way, too.

2. A substantial number of new department heads came on the scene.

They too wished to try their own ideas.

3. There was increasing emphasis on clinical clerkships with a parallel reduction in time spent in whole class didactic exercises. The increase in size of the staff in the major clinical departments allowed more time in small group exercises. The patient became the subject and object of the concentration of effort in clinical teaching. There was a large reduction in actual didactic hours. For instance, in medicine the hours of lecturing were reduced to one fifth of their former number.

4. It was recognized that whereas correlation in time of presentation had been attained there was often little correlation in thought. The necessary preliminary staff work was hard to achieve, more because of the great press of work than from ideological differences. It has been possible to retain temporal concentration on various topics within the pattern of separate departmental programs.

5. The key role of general medicine and general surgery became the central theme of clinical teaching and the emphasis on the clerkships provided daily work in which the student had to do his own correlating rather than have predigested, homogenized spoon feeding do it for him. Thus, we discarded the notion that great committees of correlators, integrators, interdigitators and prestidigitators should prepare an easily assimilated pabulum and transfer it to the student in the manner of parent pelicans.

6. Possibly the most useful result of the correlated course was to break down the sometimes tightly drawn boundaries between departments which held the threat of feuds and marauding among sensitive and insecure Balkanized principalities. The

individual members of the faculty got to know one another better. The program was educational in this larger sense. The subject matter of other departments and their reasons for holding certain opinions were learned. Rumor and complaint gave way to discussion. Whatever the exact reason, the morale of the clinical staff went up steadily. A great deal of exchange among departments in planning courses now goes on all the time but informally rather than by formula.

7. The clinical pathologic conference and the joint clinical conferences gave ample opportunity for interdepartmental differences to be aired. Specific problems provided the text for free, and frequently vivid, discussions and differences. Students, interns and residents are encouraged to participate in the discussions. They have retained an active role in these exercises which constitute the high point of clinical teaching.

8. There is a large amount of joint teaching of undergraduate—house staff—and clinical staff in the chest clinic, hematology conference, thyroid clinic, the electrocardiographic conference, blood coagulation seminar and similar special activities which have no departmental status whatever. In fact the task force approach has now progressed so far that the groups with special interest must avoid setting up a new series of academic princedoms which would merely supplant the departments as entities.

It should be pointed out that the Iowa experiment was not an experiment in correlated teaching but an effort to schedule work as a means for increasing the correlation of the teaching. Interdepartmental conferences and teaching exercises such as the clinical-pathological conference had been going on for a long time.

Combined teaching had increased slowly. In effect, the program was not so much aimed at the coordination of clinical teaching as the teaching of diseases considered to be important in medical practice or illustrating basic mechanisms of disease. These require formal and relatively complete treatment in any curriculum. It is true that in the minds of many of the faculty, virtually every known disease might fit into this category. One of the practical difficulties encountered was the fact that pathology, which many have considered to be a preclinical subject, had to be spread throughout the last third of the second year and all of the third year in the schedule worked out by the committee. This meant, in effect, that many junior clerks on various services had their clerkship before they had the portion of pathology dealing with diseases that they were encountering clinically. This introduced practical difficulties since clinical teaching had to be varied considerably from one group to another.

Summary

The formal program of a correlated course for clinical teaching in the college of medicine at Iowa was abandoned. This was done because some of its objectives had been gained and others did not turn out to be sound. Rather than a rigid frame-

work which forced clinical teaching into a fixed and predetermined ritual, teaching is now collaborative with many conjoint enterprises. The theme of cooperation rather than the ideology of collectivism prevails. Each year we make changes, hoping that they will bring improvement. The growing conviction is that good teachers provide the warp and good students the woof of the fabric of a school in striving to reach the goal of educating fine physicians. The spirit rather than the plan is the crux. The pattern may vary sharply with time and place, but excellent cloth is still woven from good thread by a very simple method. Not all the power looms and curricular machinery can make silk purses from sow ears; nor has an experiment or test been devised which can clearly separate them at all stages of weaving. For such tests we must continue to search through the dark and unmapped wilderness of the future.

REFERENCES

1. "The Teaching of Physiology, Biochemistry and Pharmacology." *J. Med. Educ.* 29: No. 7, Part 2, July 1954.
2. BEAN, W. B.: A Department of Internal Medicine," *J. Med. Educ.* 29:11, 1954.
3. GREENE, J. A.: Coordination of Clinical Teaching: Method and Results of an Experiment. *J. Assn. Am. Med. Coll.* 20:129, 1945.

Fundamental Elements

of Medical Education

ASHLEY WEECH

IN THE MIDDLE 1930's, while I was still a member of the faculty of the Columbia College of Physicians and Surgeons, I recall reading a statement by James M. Landis, then chairman of the Securities and Exchange Commission. In a commencement address at Princeton, Landis said, "There is no teacher worthy of his salt but who has been dismayed both by his own inability to portray a subject adequately and also by the unwillingness of a class to put forth the intellectual effort required to receive it." The challenge of the Landis statement hit me with unusual force since for years I had been groping for techniques which not only would enable a teacher to dish up his facts in palatable form but also in a way to arouse the student to accept his share of the job. For many years I have pondered the problems. With humility, for I do not yet know the answers, I have elected to speak about my cogitations.

Goals of Teaching?

What are the goals of teaching? There are many essential components, among them: (1) the implanting of facts in the student's mind

and (2) guiding the mind of the student to use the facts constructively in sound processes of thinking.

Factual knowledge is gained in many different ways and the student must be induced to utilize all of the sources. Books, journals, pictures, didactic classes, conversation with teachers and talk with other students, each has a part to play. The student may be discouraged about intensive library research because the hours in the wards, the laboratory and the classroom are long and because the number of books in the library seem to be counted in millions. For some years during a period when I was assigned as an orientation proctor to a small group of freshmen medical students, I made it a practice to take each annual group through the library. We first wandered through the stack rooms viewing the countless tomes and then turned to the indices by means of which information in the volumes on the shelves becomes accessible. To illustrate the method we selected one topic, "scarlet fever," and looked it up in the first appropriate volume of the Surgeon General's Index. This volume was published in 1891 and we found in it 40 pages of closely printed references to "scarlatina." The next appropriate volume, 1910, contained 28 pages of references and the 1931 volume added another 14 pages. We

Dr. Weech is the head of the department of pediatrics, University of Cincinnati College of Medicine. This article is adapted from a speech given at the 25th anniversary celebration of the Columbia-Presbyterian Medical Center, October 12, 1954.

moved on to the Quarterly Index with new volumes and new references appearing year by year. And finally we went to the current periodical room where more than 300 different medical journals received in the last few weeks or months were on display. Having explained the manner of alphabetical arrangement of the periodicals, I would then turn to a student and say, "John, you have seen how carefully medical information is catalogued. What plan do you have for catching up with what has been done in the past and how do you propose to maintain familiarity with current thinking and new discoveries?"

The freshman student always responded with a look of complete frustration which rapidly spread to the group after several others had been accosted with the same question. Then, the time had come to point out the obvious, namely, that no single human mind could encompass the whole, a circumstance with an important corollary. If each man develops reasonable habits of perusing current literature and if from time to time he delves more deeply into the writings of the past in connection with some topic that has aroused his curiosity, then each will have in his possession a fund of information that is wholly individualistic and distinct from the body of lore belonging to any other man. A student who has practiced such a habit will always be able to contribute constructively to the knowledge of a group when several or more physicians and students are discussing the problems of patients. We shall see, as the essay unfolds, how vitally important it is that he be able so to contribute.

We have said that factual knowledge is acquired in many different ways. Among the most important is to learn to grasp facts from observa-

tion. Herein lies a primary reason for teaching at the bedside with small groups of students who are learning by experience how to see, hear, feel the normal and departures from it. Cultivation of curiosity gives incentive to the art of observing. Well do I remember a fourth-year bedside class with Dr. Edwards A. Park. "Look," said Dr. Park, "the baby's gums are white. Why," and he looked at me, "are the gums white?" I confessed I had never noticed that the toothless gums of infancy are often pale in contrast with surrounding mucous membranes. I hazarded a guess that perhaps teeth preparing to erupt had obstructed the circulation. This concept was discussed at length and discarded as being inadequate to explain the distribution of the pallor. I learned much from the discussion about the order of eruption of deciduous teeth but my curiosity was climbing. Then, Dr. Park confessed he did not know himself what made the gums white but that someone ought to find out and let the rest of us know. One of our great teachers had driven home a point. Be constantly curious about things you see! No detail is too small to merit questioning observation! In this way only will eyes, ears and fingers continue to add facts to the storehouse of knowledge.

The importance of factual knowledge can scarcely be overstressed. No amount of reason can reach a sound conclusion when factual knowledge fails. I remember vividly the plight of a greatly perplexed intern at Monday morning rounds after he had admitted and studied over the weekend a boy with Friedreich's ataxia without making a diagnosis. At the rounds the nature of the illness was recognized at once by a number of his teachers. On the way to lunch after the rounds were over the intern vocalized his perplexity. "What do

you do," he said, "when you have taken the most careful history you know how to take; what do you do when your physical examination has been as detailed as you know how to make it; what do you do when neither history nor examination gives any clue toward making a diagnosis? I know I should go to the library but how does one proceed to look the subject up when he does not have the foggiest notion of what subject to look up?" A sympathetic feeling bit me to the core. Indeed, does the doctor exist who has not experienced this intern's plight? With careful words I answered, "Some fact from the anamnesis, some fact from observing the patient, must tinkle a bell in the cortex of experience. Pitch and position of the bell are relatively unimportant. The essential thing is that some bell tinkles. And, the more bells that ring, the more clues for library research."

The conclusion is clear. In teaching medical students facts must be imparted. The greater the number of facts, the better prepared is the student for the problems of future practice.

Danger Emerges

So clear is the conclusion that a real danger emerges. The teacher in his enthusiasm to present the latest knowledge, in his meticulous care to cover each minute detail, may find that time is short and invariably he talks too much. "Spoon feeding," the students call it and the better students know that the method is not good. Facts are to the physician what tools are to the craftsman. They are essential but serve their purpose only when the student learns to use them in sound habits of drawing conclusions. Better fewer facts and more practice in the use of facts! How to

mold the mind is a supreme challenge to better teaching. After more than 30 years of pedagogic contact with students in four medical schools, I still feel inadequate to meet this challenge as some day it should be met.

System

When we teach system in taking histories and doing physical examinations we are moving in the right direction. "System," Osler wrote, "is the harness without which only the horses of genius may travel." Yet most of us do not bring enough systems into guiding processes of thought as the student weighs the facts at hand and gropes toward a diagnosis. As one of the oral examiners of the American Board of Pediatrics, I have been distressed over a number of years at the relatively small number of candidates who seem able to systematize their discussion of problems in a way that makes it impossible to forget for the moment significant aspects of a topic.

An example will make more clear the point I have in mind. A student has been asked to discuss before a group the case of a young child with a history of cyanosis dating from early infancy. As the child passed the age of infancy the cyanosis came to be associated with the collateral findings of classical *morbis caeruleus*. When historical, physical and laboratory findings have been detailed, the student may properly be asked for a diagnostic impression. At this important moment comes an opportunity to observe and also to guide orderly processes of thought. The usual student of my acquaintance will, if unguided, mention as a first possible diagnosis what was the ultimately correct diagnosis in the last similar case he remembers. This method is

bad because the experience of a student still in medical school is necessarily very small. Another student will have engaged in preparatory reading of a textbook or even in reviewing recent literature. His impression will be based on frequency of occurrence. His first diagnostic impression will be "tetralogy of Fallot" and perhaps as a second guess "transposition of the great vessels." This method is better than the first but still not good for it means that the patient with unusual disease will escape correct diagnosis.

Only the rare student without guidance will systematically order his mind to follow the course of the circulation through heart and lungs. Such a student will start his thinking at the moment blood enters the right auricle. His first diagnostic thought will therefore not be concerned with the most frequent cause of *morbis caeruleus* but with the possibility of a vascular anomaly in which a vein returning from the lungs enters the right rather than the left auricle. This lesion alone is not a cause of cyanosis but it does occur in recognized syndromes which are so associated. Questions enter the mind concerning the possibility of atrial septal defect. The student then considers the tricuspid valve. Atresia of the valve, obligatorily associated with hypoplasia of the right ventricle and accompanying compensatory anomalies, could be the cause of the cyanosis. If the foregoing can be eliminated, the student will then go on to consider the right ventricle. Does this chamber discharge its blood solely into the pulmonary artery or is there an overriding aorta which receives part of the flow? Is there an abnormal communication between the ventricles? Is there an obstruction to the flow into the pulmonary artery? Beyond the pulmonary artery lies the vascu-

lar bed of the lungs; this student will ask himself whether or not a congenital arterio-venous fistula could be the cause of the symptoms. In a similar way the careful orderly mind will pass through the left auricle and ventricle, into the aorta and past a possibly patent ductus or coarctation until the path of the circulation and the causes of cyanosis have been mentally reviewed as they may or may not apply to the case under consideration. A student with a mind trained to function in an orderly manner may miss a diagnosis because of lack of knowledge of the existence of certain anomalies but he will not have failed in his thinking, because of momentary forgetfulness, to have considered the possibility that numerous combinations of anomalies with which he is acquainted might be the cause of the patient's symptoms.

In Paul Wood's book, "Diseases of the Heart and Circulation," I was delighted to discover a few pertinent lines under the heading, "Determining the Presence or Absence of Congestive Heart Failure." I quote: "The venous pressure may be assessed by inspecting the cervical veins. The examiner should not feel guilty if he then switches from inspection of the neck to palpation of the liver to discover whether or not that organ is engorged; nor should he feel embarrassed if he desires to turn from the right hypochondrium to the feet and sacral region in search of oedema; if he be criticized for gymnastics, he may reply that he is more concerned with the logical sequence of his thoughts."

Herein indeed is a challenge to better teaching. I feel certain that teachers can learn to encourage orderly processes of thought, that such orderly thinking will enhance immeasurably the value of factual knowledge possessed by the student.

Case Presentations

I have experimented with another technique of avoiding "spoon feeding." Perhaps some of you who teach pediatrics may wish to try it. The situation deals with case presentations before small groups of students where the traditional technique is to have one student, assigned to the case, present the history, physical findings, results of laboratory procedures, etc. and finally his diagnostic impressions. In the experimental technique the traditional approach is abandoned completely. The student familiar with the details of the case acts the role of the patient's mother. His classmates ply him with questions until a history has been extracted. The teacher merely attempts to guide the direction of questioning when it tends to run off on a tangent. Now and again a student will, quite fortuitously, ask a particularly searching question. If the teacher's index of suspicion is raised, he may interrupt and say, "Jones has asked a sixty-four dollar question. We'll permit the mother to answer it if Jones can tell us why his query is particularly pertinent." When the student does not know why he formulated the question or if the reason he gives is relatively unimportant, then the teacher may turn to the group and ask, "Does anyone know why Jones' question is an especially good one?" A hand is often raised and another student, Smith, gives the proper reason. I have often ascertained that Smith himself would not have asked the original question even though when told the question was excellent he knew the reason why. Sometimes the situation can be amusing. I recall vividly the startled expression on the face of a young man who was acting the role of mother of

a one-year-old infant when a woman classmate abruptly queried, "How long did you nurse him, mother?"

After the history has been obtained the student changes his role and acts the part of the patient's family physician who is familiar with the findings on physical examination and in the laboratory and who consults the class group for help in making a diagnosis. Again in rotation the students ply the actor-family-doctor with questions. Finally, the acting stops and the group together consider the possible diagnoses.

There is not time to go into greater detail. The technique is proffered as one which makes it possible to guide the paths of thought of perhaps a dozen students in a group. I may add I am often amazed at the power of collective thinking in bringing to light aspects of a problem which no one student could have coped with alone.

"Supervision"

As one who has personally experienced the intellectual stimulation to be derived from research, I have often thought of the good to be gained if every physician could at one time have an opportunity for supervised work in one of the experimental disciplines. I am thinking of supervision by the seasoned investigator who makes it a habit to think out loud in the presence of his pupil. The processes of thought are not very different from those which could profitably be used by every physician in reaching a diagnosis. The method begins with observation and a curiosity which signals that the cause of a symptom is obscure. Curiosity leads to a hypothesis which is then explored mentally for its logical corollaries. Intellectual speculation concerning all of

the consequences of a hypothesis is often neglected in the mad urge to carry out experiments and tests directed at elucidating an isolated phase of an overall problem. The speculation, if diligently and habitually pursued, will save much time and money because often an hypothesis will be discarded before any tests have been made. If the hypothesis cannot be discarded it will be useful if one or more of the corollaries can be exposed to experimental test. The testing may require the skill and imagination of a genius but again it may not involve more than looking for a sign that previously had been passed by. Repeated many times, the process is certain to have a chastening effect. Biological problems are complicated and can rarely be followed accurately through more than one serial deduction. But the hypotheses are useful even when they turn out to be wrong. For in that case they serve to discover at what point the reasoning went astray. A new hypothesis can be formulated and its consequences exposed to further tests of observation and experiment. The method in these terms is simple. By thinking out loud with a pupil and by guiding the train of his thinking we can strive to impart the method even without supervised training in research.

I have said that the method is simple. Many teachers may think it so simple as not to need conscious fostering and guidance. I am convinced that this thinking is fallacious. It is not easy for the student or physician to move through a busy career and maintain a lively curiosity. Too often we encounter satisfaction and even complacency in the statement, "We must not go beyond the facts." I belong to a school which holds that we must encourage our pupils to let fancy roam where it will. The dan-

ger-line between fact and fancy will never be obscured when fancy is habitually encouraged to formulate tests whereby its truth may be examined.

Atmosphere of Learning

There is yet another and powerful method of training the mind to use facts soundly. It is a method that affects not only the students but also the staff of teachers, as they grow older. The method evolves from the creation within a department of an atmosphere of learning. It is an expensive method because it requires the presence of a number of able teachers each of whom possesses highly specialized knowledge in a subspecialized division of the department. The subspecialists must be accessible to students, interns, residents, graduate students and to each other. The atmosphere emerges most clearly when all are assembled together for conference about the patient. Interchange of thought among students, residents and a group of teachers creates an environment in which collective knowledge is truly encyclopedic. The background of a college for physicians and surgeons, of a parent university, where teachers share together the exhilaration of research, where the research extends beyond the field of a single specialty, where the research delves deeply into problems of basic science, augments immeasurably the caliber of curiosity characterizing the conference. New information is always imparted to students and teachers alike and the facts emerge in an environment charged with the need to reason. Error of reasoning meets the challenge of greater acquaintance with fact. This is the atmosphere to incite the mind to grow.

If I ever harbored doubts concern-

ing the intellectually stimulating value of readily accessible opportunities for interchange of thought with able medical scientists, the doubts would have been dispelled by an experience about 15 years ago. I was then active as a member of the executive council of the Society for Pediatric Research. At one of our council meetings we discussed the accusation of a disgruntled pediatrics professor that the members of the society were just a bunch of snobs. The professor cited as evidence the fact that more than half of the society's members came from a mere half-dozen departments of pediatrics, that most of the departments in the country were not represented at all. The council was disturbed because its members suspected that the accusation might well be justified. A campaign was planned to instigate nominations for membership from all departments in the country where any research at all was going on. As a result more than a hundred names were submitted. Credentials, bibliographies and reprints were reviewed carefully by members of the council. The review was a discouraging experience. A few new members were found but the vast majority had to be rejected as lacking the promise of a fruitful research career. Slowly the truth dawned. Members of the society came largely from a relatively few departments because, for an average period of 10 years before winning membership, they had been exposed to interchange of thought in centers of medical and scientific learning. Living and working daily in a stimulating environment had nurtured intellectual growth; as a result they had become more deserving of mem-

bership than those who had to be rejected.

Conclusion

In drawing this essay to its conclusion I cannot escape the obligation of stressing the importance of the subject with which it deals. The purpose of all medicine is to bring medical knowledge to the bedside of the patient. The purpose of medical education is to prepare physicians to treat the diseases and safeguard the health of people. It is therefore a bounden duty to give close consideration to what is involved in training the mind of the doctor.

We are living in a century when the knowledge to be imparted has been expanding with amazing speed. We are living when the social structures of people throughout the world are also experiencing change. More and more insistently men everywhere are demanding access to the rewards of medical progress. We are also living in a country dedicated to the convictions (1) that the greatest good to the greatest number is attained by production and dissemination both of goods and of knowledge and (2) that productivity reaches its maximum under a system which fosters untrammelled initiative and collaboration.

Because these things are so and because we are proud of the American system which brought them into being, I, a former faculty member with a deep love for the place, charge those of you responsible for the future of the medical center to consider the ways and means of preserving the concepts and ideals which at its founding paved the way to greatness.

Problems in Educational Diagnosis

by the Student in the

Diabetes Clinic

ALFARETTA C. JOHNSON-COOLEY

Epidemiology as a teaching problem

EPIDEMIOLOGICALLY SPEAKING *Diabetes mellitus* is a disease of those older individuals in the clinic population. Mass surveys show that a fairly good representative cross section of the entire population has need for health education by the physician. Since *Diabetes mellitus* is an impairment, the patient must learn to live with this constitutional defect and this requires that he develop a philosophy of the so-called "diabetic's way of life." Here the physician is both educator and medical advisor. He plays a role in determining the importance of education in the total medical advice and care.

Diabetes control includes early detection and prevention. Diagnosis and treatment include supportive care of the individual diabetic when he is experiencing any of the complications and intercurrent illness. Some common denominators in the control of the complications include teaching the patient the importance of reporting symptoms related to coma,

insulin reaction, vascular complications and circulatory disorders. Table 1 presents some problems in the education of the junior or senior medical student as he attempts to make an educational diagnosis by various methods or approaches. Here he learns he cannot reduce a whole complex of a man's life into direct questions with tidy certain answers. This patient is more than an organism in a constant state of flux, but is educable and trainable and responsive. He is a learner. The doctor responds by being a teacher. Table 3 presents further considerations on epidemiology.

Classification of educational problems as they relate to the medical conditions found are individual but line up somewhat with the content of Table 2. Table 4 presents some of the many facets of educational control. Medical men have long sought clinical methods for physical control of diabetes, but the educator seeks with equal zeal educational controls. There is need for research to determine a successful widely acceptable clinical definition of control of educational complications. The current efforts in diabetes epidemiological studies are directed toward procur-

Dr. Johnson-Cooley, B.S., M.S., Ed.D., is a registered dietitian with American Dietetics Association and Dietetics Association of Canada; Member of American Association for Health, Physical Education and Recreation; Associate member of the American Diabetes Association and National Society for the Study of Communications; Member California Teachers Association.

Table 1.

PROBLEMS IN THE EDUCATION OF THE MEDICAL STUDENT IN
METHODS OF MAKING AN EDUCATIONAL DIAGNOSIS*

Properly used the medical diagnosis and the educational diagnosis can be an effective tool in the treatment of the patient with the chronic disease of public health importance, Diabetes Mellitus.

EDUCATIONAL DIAGNOSIS

1. Explore the values inherent in proper educational procedures
 - a. Mastery of knowledge and concepts
 - b. Acquisition of attitudes and understandings
 - c. Development of habits and practices.
2. Consider the inclusiveness of information contained in the educational program based on
 - a. Individual interview and case-conferences
 - b. Classes—to broaden and deepen the concepts of health as it can be enjoyed by the diabetic.
 1. Private office of the physician
 2. Demonstration unit of the U.S. Public Health Service, Diabetes Sections, regional classes for diabetics
 3. Primary instruction classes for the hospitalized patient and the family members attending the relative
 4. Primary and secondary instruction in classes for clinic out-patients.
3. Review the method currently employed in that teaching center and note the principles and mechanics for implementation in the administrative and instructional aspects of the operation of an educational program.
 - a. New offerings are predicated on the medical teams full understanding and realistic use of the entire group of educational process in planning for and administering the program.
 - b. The evaluation of different educational procedures in the treatment of the patient may serve as a measure of the accuracy of initial and subsequent teaching patterns in each aspect of the program as well as for the total curriculum.
 - c. Significant findings become direct cues that teaching practices may be examined and modifications appropriate to the situation may be made.
 - d. Service continuity means upgrading the instructional program.

*There appears to be little information available in the medical education literature to guide the professionally trained physician in his development of an educational program for the medical student in the diabetes clinic. Nor are there clear guides readily available to help him interpret the periodic statements in the educational literature on the procedures used in the treatment of Diabetes mellitus in terms of their real meaning as related to his diabetes program.

ing sufficient data to bridge some of the gaps in our information on the detection of educational factors. The age group must be reached at their educational level. Workers in mass screening point out that diabetes is about seven times more common in those over 45 years of age than those from 15 to 44 years of age. This presents an educational hurdle too.

General approaches

The general approaches which may be used in studying the problems of the diabetic patient and/or his family may be individual or collective.

The patient's physical examination will reveal some evidences of his grasp of pertinent knowledge as he interprets the facts discussed.

Measurement of silent symptoms may be done by such tests as various blood tests: Sunderman method, Folin-Wu method, Somogyi method, Wilkerson-Heftman or Folin-Malros method. Then there are methods of sugar determination of plasma or spinal fluid. Tests for glycosuria include Galatest, Dryepak, Clinitest, Fehlings' solution and the Benedict test. Estimation of sugar in the urine may previously have been done by

the patient and his report will reveal in part his accuracy and clarity of recording. Several acetone tests are available of which the following are examples: Acetest (Ames), the nitroprusside test, and the Denver Chemical Co. Acetone Test powder. The acetone test of the plasma may use the qualitative nitroprusside test, the estimation of sugar in spinal fluid having been made by the Galat-test reagent. Acetone in the blood may also be determined by the Rothera-Wishart test. Silent symptoms may be detected at the time

of the clinical histories, therapeutic tests, case conferences and dietary histories.

Concept formation in the diabetic can be stimulated by such questions as: What is a chronic disease? How can this hereditary defect be corrected? Have you noticed a change in severity since you have grown older? Has each diet been equally effective in keeping you in control? It is known that in the senile diabetic there is an estimated deficiency of 60 per cent of the normal elaboration of insulin, while there is a 90

Table 2.

CLASSIFICATION OF DIABETIC PATIENTS ACCORDING TO EDUCATIONAL DIAGNOSIS*

1. Those with a high educational potential.
These are fully and readily educable because of normal mentality and previous educational attainments, plus personality characteristics that usually can fit into regular clinical programs.
2. Those with some degree of capacity and aptitude in line with the responsibilities that must be assumed in this chronic disease.
These are not readily educable, but need special sessions and more individual conferences in order to attain the desired goals important to their care. These individuals have normal mentality, but have moderate or severe physical, sensorial or emotional disability.
3. Those with limited educational achievement and slow-learning abilities.
These are not fully educable and the educational placement depends upon the emergency and the physical condition. Some of the patients in this group show mild or moderate mental retardation and present personality disorders.
4. Those who are not educable and need custodial or institutional care for their severe physical disorder.
Some may be trainable at certain stages of their diseases but as eventualities take their toll and aged complications appear they become unable to manage their own affairs.
Certain services in the treatment of the diabetic patient may be needed almost every day, and a visiting nurse or non-professional assistant may provide the necessary injections for those home bound patients unable to have institutional care.
The hub of the educational diabetes program is the multiprofessional diabetes center which makes appraisal of the diabetes status and educational potentialities, and recommends a plan of care, both immediate and long term.

To make an educational diagnosis the physician must sell himself and his message. The scope of the educational process includes the impact of the whole of life's experiences. This includes (1) Organizing communities to meet their health needs with available resources, (2) Planning educational programs for the various component parts of the community participating, (3) Cooperating with other organizations to develop an integrated health program which will compliment and amplify each other. The physician cannot do all the teaching of the diabetic patient and his family himself. He must have someone to help him. He must use the combined competencies represented by all of the health team.

*Criteria for the educational diagnosis is (1) Importance in the medical management, (2) Observability in terms of behavioral outcomes, (3) Completeness, (4) Allowance for individual differences in order to make it highly effective to the patient, provide for significant interests, activities and accomplishments, and give aid to those with special abilities who give promise of growth under nurture.

Table 3.

PROBLEMS TO BE BROUGHT TO THE ATTENTION OF THE MEDICAL STUDENT ASSISTING IN THE EDUCATIONAL DIAGNOSIS OF THE PATIENT WITH THE CHRONIC DISEASE DIABETES MELLITUS

1. Epidemiology—in the study of the occurrence of the disease. Today the physician is an educator.

Upon what age group is the educational diagnosis being made?

Evaluation. Continual evaluation of existing teaching concepts assures the greatest degree of curriculum development. Evaluation of a mass screening program may be related back to the findings in National Health Survey.

Illustration: Diabetes is a common disease. The prevalence by age groups is: Three out of four diabetic patients are over the age of fifty. The onset occurs between 40-60 Years.

years (men and women included)	
1-19	One diabetic in 2,500 patients
20-39	One diabetic in 1,000
40-49	One diabetic in 200
50-59*	One diabetic in 100
60-69†	One diabetic in 40-50
	Incidence is greater in the obese population.

*55-64, One diabetic in each hundred men, in each fifty women.

†45 and over, One diabetic in seventy men, in forty-five women. J.A.M.A. 754, 1182. 1954; Forecast 5:30. 1952; JAMA 147, 1411-1414. 1951.

How can integration of the patients learnings from the past experiences be used in meeting his present problem?

2. Descriptive nature of the diabetes condition. What aspects of education must be stressed? First hand knowledge puts a responsibility on the patient to learn; how can he be helped to learn?
3. Complications and parts of the body to be considered. When should special education be given? Special blocks of knowledge may need to be added in the course of the disease.
4. Pathological physiology and laboratory markers. How much of the technical information is essential in making an adequate educational diagnosis?

Evaluation. A. Keith. Lancet 2. 1047. 1925.

"The solution of our problem of life is a fuller knowledge of the use and working of those parts of our bodies most apt to give way under modern ways of living. . . ."

The major thesis is that the physician has the obligation to his diabetic patient and to his community to promote the mastery for the individual of such knowledge, the acquisition of such attitudes, and the development of such habits as will make possible better adjustment by the patient to the conditions found in this chronic disease.

Health is now concerned with the optimum physical, emotional and social well-being of the individual.

Mass screening and detection drives assist the general public to appreciate the simplicity of the laboratory tests and the role of the laboratory technician as a member of the medical team is brought to their attention.

Urbanization has contributed to the usefulness of the mass screening procedures.

The population increases make mass screening a valuable tool in estimating the significance of the problem of education of the patient's need, for education of the employer in a period of industrial expansion in which diabetics may need to learn how to avoid hypoglycemic reactions while working with power machinery.

Make every physical examination a truly convincing educational experience.

per cent deficiency in the juvenile diabetic. Hence the correlation by the patient is considered by the educator to indicate something of his grasp of the scope of the insulin deficiency.

According to the best estimates there are at least one million known diabetics to four million total diabetics, if all stages of the condition are considered subject to educational improvement. Since 1948 the Diabetes Detection Drive has assisted the lay people in an appreciation of the measures to use in the early reporting of symptoms. Since polyuria, polydipsia and polyphagia are the traditional symptoms of diabetes, mothers of children, where both parents are diabetics, should be cautioned in the pediatric clinic, to make periodic checks after a severe infection. The distinguishing evidence may appear in a careful history of diabetes in the family, and the doctor of medicine may use the physical examination as an occasion to teach the important features of hyperglycemia. Hyperglycemia is a more accurate diagnostic "silent-symptom" guide than glycosuria records made by the patient at home. Slight and transitory elevations of the blood sugar may be present and the doctor may need to educate the patient as to the significance of the slight deviations from the normal. In instances of suspected predisposition and strong family tendencies, obesity is contraindicated. This is an educational problem in which the nutritionist is an ally. This is as well prophylaxis. When it is considered that the amount of glucose circulating in the blood could supply only enough calories for 10 to 15 minutes of normal energy expenditure, and that fifty times the amount of carbohydrate may be consumed at one time as exist in the

circulating blood, it is evident that the hungry prediabetic, obese, middle-aged female patient is going to need some advice and help on food selection and menu planning.

A diabetic always needs diabetes education

Education of the patient pays dividends. A case of coma in a patient has not been reported by a well-educated physician in the last two decades. The better informed individual can protect himself by knowledge accompanied by intelligent action. Treatment of the total patient is not possible all the time. An initial diet may represent only a fractional bit of information, but the doctor must be satisfied with "reasonable success" and the backlog of experience which this starter dose will furnish. Progressive levels of understanding are anticipated. A decision by the patient as to his plan for action is most necessary. The patient has responsibilities, relationships and rights. He cannot cure his educational ills any more than his medical ills. He can seek educational advice just like he seeks medical counsel. He may be lax and careless and assume a negative attitude, but the good teacher will motivate and stimulate him.

Summary

If the following illustration may be used, the type of dietary instruction serving as the example, the gradation of knowledge may be furnished by these principles:

1. Health at any level is an individual responsibility. Nutrition is a part of health. To develop the skills essential for giving educational assistance to patients the medical student must acquire an understanding of the laws of learning. He must learn how to motivate the patient

Table 4.

MAJOR ASPECTS OF INFORMATION NEEDED TO BE PRESENTED TO PHYSICIANS IN TRAINING IN THE DIABETES CLINICS ON MEASURING EDUCATIONAL PROGRESS

1. The development of effective methods of critical thinking in problems relating to
 - a. diet, food and nutrition
 - b. insulin
 - c. concurrent illnesses demanding a differential medical and educational diagnosis, and the complications of diabetes m. and stages in sequence to past events and illnesses.
 - d. exercise, work or play
 - e. philosophy of the diabetic way of life, for the inapparent unknown diabetic with the hereditary potential, for the incipient diabetic, and for the manifest diabetic.
2. The use of reasonable generalizations from specific data.
The acquisition of a wide range of significant data on the diabetic population upon whom the medical and educational diagnosis is being made, involves
 - a. greater integration of the services of the ancillary professional team.
 - b. better use of available local community resources for the benefit of the patient.
 - c. improved understanding of the patient as a social unit—an individual and not a case.
 - d. better understanding of the functions of the educational procedures in certain times in the course of the disease. This is a biological approach to education, in which the pathological physiology sets up a learning situation.
3. The acquisition of different levels of specificity in classifying information on control.
 - a. Becoming familiar with various important aspects of information needed by all patients, diet, exercise, and some more than others in insulin, mortality, morbidity, etc.
 - b. Developing the ability to deal effectively with problems arising in later life since most of the patients are over middle age.
 - c. Acquiring information about dependable sources of information relating to diet and/or equipment needed by all insulin-taking diabetics.
 "Men must be taught as if you taught them not,
 and things unknown proposed as things forgot".
 Pope.
4. The use of the physical examination to teach care and function of the body to the diabetic.
 - a. Physical check as a teaching device.
 - b. Laboratory test and mass screening as a teaching device.
 - c. Periodic check on special problems to determine How much progress has been made to reach predetermined achievements in health status?
 - 1) Setting down the objectives
 - 2) Selection of appropriate tools for the evaluation of the objectives
 - 3) Measuring progress toward the goals
 - 4) Coordination of the findings
 - 5) Redirection, reorganization and expansion as a result of the findings.
 Will special services help the patient improve his health or educational status? The estimate of progress should be made in terms of
 - a) Ultimate outcome expected for the patient
 - b) Immediate and long-term objectives for him
5. The placing of emphasis on the preventive approach and the social and community aspects of health and well-being.
 - a. Coordination of services. Coordination does not mean the end of the identity of the various clinical teaching resources, but rather a recognition of common problems, and joint responsibilities to a place of supplemental and combined significance.
 - b. Individual applications of educational principles require localized research through which the basic knowledge can be adapted to locally varying conditions existing in the diabetes clinic population.
 - c. The estimated timing of individual progress.
 Educational help given to each patient should be carefully selected.
 - 1) The doctor is dealing with an aging population, four-fifths are over 45 years of age.
 - 2) an overweight population, 17 out of 20 of those over 40 years of age are overweight.
 - 3) a population with more women than men, three women to two men is the usual ratio.
 - 4) an increasing number of patients who have benefited from early diagnosis.

and to overcome psychological barriers to learning.

2. The individual must develop a basic understanding of the etiology, symptomatology, course, complications, treatment and resources for care at the local, state and national levels. Diet modifications as a part of the treatment should not occupy the major portion of each clinic visit. Classification of food and general principles of specialized dietary management have a place, but only a small part of the total educational curriculum, and other matters of concern should be brought to the attention of the learner. Exercise and corrective measures may require some reading assignments by the patient. Nursing care in orthopedic surgery includes such information to the family as their place in the care of the amputee, mental

aspects to report, physical therapy aspects, rehabilitation and prosthesis care. Timing of instruction to the patient may mean the individual faces his educational problems with greater assurance.

Conclusion

The doctor does his part to teach the student the principles of health and to encourage the diabetic to practice these principles in daily living. The physician as an educator sets up a learning situation, so designed as to produce maximum learning under stress, to encourage the student to assume responsibility for his own health program. This role of physician-educator is learned by the medical student as he appreciates the laws of learning, the laws of forgetting and the differences in learning capacity of the patient.

An Outline for a Curriculum for Teaching Psychiatry in Medical Schools*

THE COMMITTEE ON Medical Education of the American Psychiatric Association has prepared this outline to guide departments of psychiatry and medical schools in organizing their teaching of psychiatry. The project is an outgrowth of the 1951 Ithaca Conference on Psychiatry in Medical Education, which the American Psychiatric Association and the Association of American Medical Colleges sponsored jointly. The conference evoked a large number of requests for a more detailed statement concerning what medical school graduates should know about psychiatry and how schools can convey such knowledge and skills.

Progress in psychiatry requires constant experimentation in teaching and continuing reevaluation of conceptualizations. The committee does not seek to set patterns of instruction but to establish standards. Each department of psychiatry has special interests, and its members particular skills, that must properly guide the nature and organization of its teaching. However, the differing emphasis placed upon the teaching of psychiatry in the various schools; the difficulties encountered in presenting partially formulated concepts; and the diversified approaches to the subject matter have led to the graduation of medical students whose experi-

ence and knowledge concerning psychiatric matters is far more divergent than in other areas of medical education. The graduates of many schools have little understanding of the interpersonal problems of their patients and are inadequately prepared to deal with them. Residency training in psychiatry starts with virtual beginners, rather than with graduate students as in other fields. Complaints are heard from other departments, as they develop increasing interest in comprehensive, patient-oriented medicine, that their interns and residents have only a rudimentary knowledge of relating to patients and of the scientific approaches to understanding interpersonal relationships. It has become essential that physicians emerge from medical schools with a background in psychiatry that is not only adequate but also approximately similar, just as in other major areas of medical education.

The nature of medical practice has altered rapidly because of the advances in the medical sciences, leading to increased attention and involvement with chronic illness, geriatrics, developmental problems of childhood, and disabilities due to emotional conflict and maladjustment. The concepts of modern psychiatry have become increasingly useful to the physician because of the advances in psychiatry and the changing interests of medicine. Medical practice today requires a firm foundation in

*Prepared by the Committee on Medical Education of the American Psychiatric Association. The publication of this document has been approved by the Council of the American Psychiatric Association.

Outline Curriculum for Teaching Psychiatry in the Medical School

the science and art of interpersonal relations to enable the physician to treat patients rather than diseases and to understand the social and physical environment that affects the patient's health. The 1951 conference recognized the changing needs and stimulated a reorientation of American medical education.

As the volume, "Psychiatry and Medical Education,"* provides an excellent report of the 1951 conference, the present document will not attempt to summarize further the discussion of the many fundamental problems of contemporary medical school education which it encompassed. The conference approved of the need to incorporate the body of knowledge and skills that comprise modern psychiatry into the medical school curriculum. It considered that the proper preparation for clinical work in all subjects required that psychiatry provide instruction in the preclinical years concerning those aspects of behavior that are specifically human, to supplement the mammalian model that serves in most preclinical sciences. As the variations and vicissitudes in personal development which affect man's transactions with his fellow man also influence his physiologic functioning, they have immediate pertinence to the entire problem of health and disease. The student requires experience during the clinical years of school in understanding and treating patients as persons and in developing skill and judgment in utilizing the doctor-

patient relationship therapeutically.

Many of the difficulties which formerly impeded the adequate teaching of psychiatry are disappearing. Members of other clinical departments have become aware that students and residents require considerable background in psychiatric theory and skills to care for patients properly. It has also become increasingly apparent that scientific progress concerning many unsolved problems in medicine requires further knowledge of physiologic changes associated with emotional conflict. In most medical schools, increased time in the curriculum is no longer being denied to psychiatry. Rather, departments of psychiatry are being urged to improve and expand their teaching, and the departments need guides to help plan the expansion.

Although controversial issues among psychiatrists continue, many of the differences of opinion involve theory or therapy at levels that do not basically affect student teaching. Teachers express substantial agreement concerning a core of knowledge that students need to acquire and they also recognize that students require exposure to divergent approaches to prepare for future advances. The committee wishes to emphasize at the outset that the material can be taught and the experience gained in a variety of ways. It would make the document extremely unwieldy to cite examples of methods currently utilized in various schools. Few departments of psychiatry are satisfied with their teaching and all seek ways to improve instruction. Further, the pattern of instruction must suit the facilities available and the school's particular curriculum pattern, as well as the interests and individuality of the teachers. On the other hand, the school must consider the problems involved in teach-

*"Psychiatry and Medical Education:" Report of the 1951 Conference on Psychiatric Education held at Cornell University, Ithaca, N. Y., June 21-27, 1951. Organized and conducted by the American Psychiatric Association and the Association of American Medical Colleges, Washington, American Psychiatric Assn., 1952.

ing psychiatry when it formulates its curriculum and it must provide adequate clinical facilities.

Few if any medical schools have developed departments of psychiatry that are adequate for the tasks now required of them. Almost all departments are hampered by a paucity of space and money, both products of psychiatry's late arrival as a major subject. The shortage of well-trained teachers will continue for a number of years. One of the greatest difficulties confronting departments of psychiatry stems from the need to teach in both the preclinical and clinical years. Since they were established and have been maintained essentially as clinical departments, the demands upon the teachers, both in time devoted to medical school teaching and in breadth of knowledge of many relatively divergent subjects, has become too heavy. Currently the full-time teacher can find little time for research and study, making the academic positions tempting to neither scholar nor investigator. Proper changes in curriculum can only occur when medical schools reorganize sufficiently to permit marked increases in the size of departments of psychiatry in keeping with their greatly increased teaching load. Some schools still lack autonomous departments of psychiatry and their hospitals lack adequate psychiatric facilities. Psychiatry cannot be taught properly as a subsection of internal medicine or neurology. It is an area of medicine, with its own contents, perspectives and needs, and actually with more widespread teaching responsibilities than other areas of medicine.

THE PRECLINICAL YEARS

The teaching in the first two years of medical school presents difficulties concerning both content and peda-

gogy. Much of what psychiatrists seek to teach in the preclinical years should not be considered as instruction in psychiatry. The study of personality development and maldevelopment and an orientation to the science and art of interpersonal relations are necessary preparation for clinical subjects. Other departments share in the teaching and in some schools they now collaborate actively. The department of psychiatry has the major responsibility, not only because these subjects form the foundation for clinical psychiatry, but also because the psychiatrists' consistent interest in personality development and psychodynamics best fits them for the task. However, pediatricians' interest in problems of personality development in childhood leads them to participate increasingly in many schools.

Many departments of psychiatry have assumed the responsibility for broadening the students' perspectives of the science and art of medicine. They have used allotted time to foster a comprehensive approach to medicine which stresses the integration of human behavior, and which focuses upon the patient rather than the illness. They have also sought to interest students in the social forces which affect people and their development, to balance the more purely structural and physiologic approaches of other preclinical departments. Such instruction, which seeks to widen horizons, alter attitudes and increase personal awareness, while important for the teaching of psychiatry, forms a contribution to the general education of the medical student and should not be considered as part of the psychiatric curriculum proper.

Recognizing that the student's emotional immaturity and his own defenses against anxiety may block his

Outline Curriculum for Teaching Psychiatry in the Medical School

perception and understanding of patients' emotional problems, some teachers of psychiatry have sought to increase the student's awareness of his problems and defenses as an essential prelude to teaching about the interpersonal problems of patients. However, increasing empathy for patients, fostering emotional maturation of students, promoting the student's awareness of his own problems, etc., are not ends in themselves but a means of opening the way for the acquisition of skills and knowledge. The committee believes that such matters are best approached through concern with relatively normal ways of adjustment rather than through entering upon therapy of the student. A teacher-student relationship rather than a doctor-patient relationship should maintain in these subjects as in other areas of medical instruction.

The material to be taught in the first two years encompasses three related areas.

1. *Personality growth and development, including the integration and the adaptive devices of the personality.* Such courses are usually called "human biology," "psychobiology," "medical psychology," etc. However taught, the core of the material concerns the development of the genically endowed organism into a person through maturation and, at the same time, through interpersonal experience. It stresses that which is essentially "human" in behavior, amplifying the material taught in the physical and biological sciences which to a large extent pertains to infra-human functioning almost as much as to the human. In so doing, it places particular emphasis upon the importance of mentation and symbolic behavior; the modification of basic drives through socialization; the development of individual character; as

well as the conscious and unconscious factors in understanding motivating forces that affect both physiologic and overt behavior.

2. *Psychopathology*, which might optimally be taught as an extension of the study of the variations of normal development and behavior, includes the recognized personality types which are usually considered as variants of the normal, as well as the suffering and illness imposed upon the self and others by distorted personality development.

3. *Instruction and practice in techniques of interviewing and in the understanding and use of the interpersonal physician-patient relationship as a diagnostic and therapeutic agent.*

The location of these subjects in the curriculum pattern, the methods of teaching, and the material to be included, can vary widely. As mentioned, schools with sufficient curriculum hours may wish to devote considerable time during the first year to broadening the student's horizons concerning medical care and inculcating an orientation toward patient-centered comprehensive medicine. It is important that instruction in these topics start in the first year of medical school and preferably at the beginning of the first year. It has often been asserted that the student is too preoccupied with anatomy, physiology and biochemistry to pay sufficient attention to these subjects. It is precisely for this reason that teaching in the first year seems essential. The student who usually enters medical school with an interest in people often loses such interest unless the integrated functioning of the person in a social setting receives emphasis from the start. Without it, the student gains the impression that the biologic and physical sciences

alone form the basis of the practice of medicine and does not learn to think in terms of the interaction between the physiologic, psychologic and social factors essential to the understanding of health and disease in man. The teaching of the basic biologic and physical sciences can benefit if students very early gain a comprehensive view of the total person set in an environment that is physical, cultural and interpersonal.

The study of these three major areas belongs in the preclinical curriculum because they are essential to the students' understanding and treatment of patients. Any work with patients during this period should be clearly designated as a means of learning, rather than patient care for which most students are unprepared.

Instruction that is purely didactic is as ineffective in these subjects as it is in other preclinical areas. Difficulties arise because the human being is unsuited for demonstration experiments except to a limited extent. Various ways to overcome this difficulty are being found: (1) Students are assigned to study patients and families in homecare programs, or to interview and follow patients in a hospital or in some community setting such as nursery schools, children's homes, etc. Such teaching methods require the collaboration of other departments, and homecare programs may require reorganization of the entire teaching program of the medical school. (2) Patient demonstrations are used freely. (3) Recorded interviews and suitable film material from various film libraries are utilized. (4) Classes are divided into active discussion groups for interchange of personal experience and opinions. (5) Laboratory experiments in physiology demonstrate the effects of emotions upon physiologic

functioning, utilizing both animal and human subjects. It requires ingenuity to find active teaching methods adapted to the local situation.

An attempt to designate more fully the content of the three preclinical courses follows:

I. Personality Development and Functioning

(a) *The interrelationship and interdependency between physical maturation, environmental experiences, and the interpersonal background of the growing child.* A general introduction to the integrating activity of the central nervous system with emphasis on the role of symbolic functioning in human integration. The helplessness of the infant at birth and the importance of the prolonged dependency of the human; the general effects of parental attitudes and handling upon physiologic reactivity and personality formation; the need for correlation between levels of maturation and the demands placed upon the child for socially acceptable behavior; the relationships between mothering, feeding, dependency, and basic security. Various problems of domestic socialization: bowel and bladder training, feeding problems, fitting into the family, the early arousal of shame and guilt; problems involving locomotion and early independence, and their relationship to parental attitudes; the concepts of oral, anal and genital stages of development and their critical evaluation; the development of differentiation between self and surroundings and between fantasy and reality; the strivings toward maturity and growing independence, as against gaining security through regression and dependency; the development of identifications with parental figures, with cognizance of the early identification

of children of both sexes with the mother; the problems and management of infantile sexuality. The family drama: the Oedipal situation and its resolution, including the establishment of sexual identity as a male or female; ambivalence toward parental figures and problems of sibling rivalry; problems arising from deprivation of a parent; ways of handling anxiety and aggression and means of achieving balance between gratification and frustration. Later childhood: community socialization and so-called latency; the adjustment to school and the effect of variations in intelligence on personality development. The impact of puberty on boys and girls: the physical changes; the arousal of personal sensitivity and the reawakening of earlier sexual and developmental problems; adolescent revolt and conformity. The development of an adequate ego identity, or the evolution of a concept of distinctive self; the importance of role-taking and having suitable guides in promoting a satisfactory emergence from adolescence; the difficulties of vocational choice, perhaps with emphasis on the students' problems in this area. Problems surrounding courtship and marital choice. The sexual adjustment in marriage and the rudiments of knowledge necessary for sensible marital counselling. The impact of pregnancy, parenthood and the changes in the marital relationship produced by parenthood. Typical problems of the later years: the frustrations of middle-life; the adjustments to the menopause, to the children leaving the home; the loss of parents; the loss of the spouse, etc. The problems of the declining years and declining abilities, the impact of chronic incapacitation, and the necessary adjustments to them.

(b) *Personality structure and integration:* basic drives as motiva-

tional forces; anxiety arising out of conflict and leading to repression and other adaptive mechanisms; an introduction to the problems of conscious and unconscious motivation; the importance of identification in learning and development; the concepts of the id, ego and superego, and their critical evaluation; role-taking and its importance in the development of the personality; patterns of living and their adaptive character.

(c) *Social and cultural forces affecting personality development and behavior:* ethnic and class differences in mores; typical problems of family life; the effects of intrafamilial conflict and family dissolution upon members of the family; the family as a carrier of cultural patterns; the culture as the conveyor of mores and skills; the interrelationship between the individual and his culture; the growth of man into a culture and man as a carrier of cultural patterns; the role of religion in contemporary life; the individual in an industrial society.

(d) *An introduction to the role of language and mentation in human behavior:* intelligence as an adaptive tool; consideration of the extent to which the human can utilize the past and plan into the future; the integration of human behavior at a symbolic level of functioning, perception and its projective qualities; conditioning in the learning process; intelligence and differences in human functioning according to intelligence levels.

(e) *The role of emotions in physiologic functioning:* The role of the autonomic nervous system and the endocrine system in both physical and psychologic adaptation; infantile and childhood emotional experiences and the conditioning of physiologic patterns to internalized emotional conflicts; illustrative material such as

the impact of emotions upon gastric, colonic or cardiac functioning.

It seems unlikely that the very large amount of material contained in this course can be taught successfully in less than 60 curricular hours; particularly if students spend time interviewing people, or in small discussion groups. The absence of a suitable text for such courses greatly increases the difficulties in teaching.

Obviously, this material can be taught in many different ways, in conjunction with various departments, and divided differently between the first and second years in medical school. It is particularly in this area that considerable experimentation remains necessary to find suitable teaching methods. The teaching of first year students requires the most experienced teachers. The student's initial impression of the field of psychiatry and what it can offer is often based upon his impressions of the teacher as much as upon the subject matter. In psychiatry, the experienced teachers are usually clinicians who may be reluctant, or even unable, to readjust to teaching at a first year level, and to become familiar with the knowledge and needs of first year medical students.

Certainly some of the material lends itself to teaching in conjunction with other departments. Such topics as learning, perception, memory, etc., scarcely mentioned in most courses in physiology, and neuroanatomy, might fit most aptly into these courses. Proper emphasis of the influence of emotions on bodily functioning can enhance the values of courses in physiology and biochemistry but tradition leads to virtual neglect of such topics in these courses. Pathology can be broadened to include consideration of the emotional factors in the etiology of cer-

tain pertinent conditions such as peptic ulcer, ulcerative colitis, etc. The introduction of such material into these preclinical sciences will help broaden the students' perspectives and greatly aid the integrated teaching of medicine.

2. Psychopathology

Psychopathology has traditionally been taught during the second year of medical school. Often patients are presented to illustrate the various psychopathologic conditions accompanied by a delineation of the typical features of psychiatric syndromes according to a modified Kraepelinian classification. In recent years, some medical schools have tended to eliminate this course, leaving the study of psychopathology until the student works with patients in the third and fourth years. Despite certain advantages in such delay, the student then reaches his clinical work without the knowledge requisite for understanding his patients, which diminishes the value of his clerkships in all subjects.

In general, there has also been a tendency to get away from classic descriptive psychopathology in an attempt to teach the subject as an extension of the variations of normal development and behavior. Emphasis is placed upon the various mechanisms of defense and their use maladaptively, and perhaps upon the relationship of personality types and pathologic syndromes to fixations at various developmental stages of childhood. Certain basic principles of psychopathology cut across syndromes or psychopathologic conditions; such as, regressive behavior, fantasy life, problems of separation and dependency, etc. Such topics as regressive behavior and problems of identification require study in vari-

Outline Curriculum for Teaching Psychiatry in the Medical School

ous contexts, in diversified situations, and in their relationship to other adaptive and maladaptive mechanisms. There is a need to combine the more dynamic approach with descriptive psychopathology. An approach that would again start with the child and review the types of difficulties that arise in the course of maturation and development, contains merit and promise. If students are to be prepared properly for medical practice, a much broader introduction to psychopathology than has conventionally been taught is required. For example, psychopathology should include dynamic understanding of such matters as feeding problems in childhood, night terrors, enuresis, etc.; problems of emancipation from the mother; common difficulties that arise in school life; problems of juvenile delinquency as related to the social environment and to intrapersonal conflicts; adolescent behavioral disorders; problems of homosexuality; difficulties in marital sexual adjustment, pregnancy and childbirth, and many other such problems encountered among patients regardless of the specialty being practiced. The dynamic psychopathology of the various neuroses and the major psychoses can be presented in a manner that will not only give familiarity with the clinical syndromes which students must learn, but also will illustrate the various mechanisms of defense which the student should learn to recognize in less seriously disordered individuals. Practical reasons suggest giving considerable attention to the psychopathology of alcoholism and of problems involved in marital disharmony. The introduction of material concerning the psychopathology of the so-called psychosomatic disorders prepares the student to appreciate the role of emotional factors in clinical medicine.

The tentative nature of current understanding, and the need for further investigative work requires emphasis lest the student gain the impression, as too frequently occurs, that the fundamental problems concerning these conditions have been solved. Currently, it seems necessary to remind departments of psychiatry not to neglect the psychopathology of the various "organic" syndromes. It has been noted in many hospitals that toxic and organic psychoses are frequently misdiagnosed as functional psychoses because of the increased emphasis in teaching dynamic psychiatry, which has often led to neglect of those illnesses primarily involving damage or dysfunction of the brain.

The difficulties encountered in having proper teaching material available for presentation when desired can be partly overcome by the use of sound films demonstrating appropriate cases and tape recordings of interviews with patients.

Proper clinical instruction in psychiatry in the third and fourth years requires that the medical student be prepared to recognize various psychopathologic manifestations, in a course in psychiatry or anywhere else; just as he is expected to diagnose various diseases wherever encountered in his clinical work. The paucity of serious teaching of psychopathology in the preclinical years probably contributes to the resistance and bewilderment which many students display when confronted by patients with psychiatric disorders. Another unfortunate consequence is the unawareness of much good psychiatric material, overlooked during work in other fields of medicine. Whenever possible, teaching by lectures or demonstrations should be augmented by small, informal discussion groups which permit students to ask questions and to seek clarification of prob-

lems raised by patient presentations.

3. Interviewing Techniques and the Therapeutic Use of Interpersonal Relationships in Medicine

The ability to interview properly is of paramount importance in all spheres of medical practice. Interviewing as taught in psychiatry should not be completely dissociated from history-taking as taught by departments of internal medicine. Ability to carry on an interview requires familiarity with the dynamics of the doctor-patient relationship. Supervised experience for each student appears essential, for interviewing techniques and skills cannot be learned from books, lectures or demonstrations alone. Practice is essential, just as in courses in physical diagnosis. Students need to learn the fundamentals of how to relate to patients meaningfully; the ability to listen and to draw out the patient, the use of minimal activity, the ability to hear what the patient tries to say even when he cannot say it. The use of silent understanding, the simple repetition of phrases or expressions, and techniques to elicit information by nondirective techniques may be taught. Initially, however, the student requires formal guides for conducting the interview, such as: how to gain information concerning the problems which currently confront the patient; how to evaluate the emotional and mental status; how to gain information concerning the family and social background that helps provide understanding of the current situation. Knowledge of personality development and psychopathologic mechanisms is requisite for the understanding of interview material and for carrying on the interaction of the interview. The medical history requires more formal or-

ganization to make certain that the novice covers essential areas. The use of one-way screens, both to observe experienced interviewers and to be observed by them, can help greatly. The review and explanatory discussion of tape recordings of interviews can foster great interest. The therapeutic role of an understanding interview usually remains incomprehensible to students until they have the opportunity of observing the results of such interviews upon patients.

A suitable time for instruction in interviewing comes at the end of the second year when, in most medical schools, the student studies such subjects as clinical pathology, physical diagnosis, etc., to prepare for the clinical work which starts in the third year. Clinicians in all fields of medicine agree that skill in interviewing is a prime diagnostic and therapeutic tool and urge students to acquire such abilities. Only the absence of tradition leads to the relative neglect of interviewing in medical schools. In some medical schools, particularly where the students study a family, interviewing techniques can be taught usefully earlier in the curriculum. It is urged that instruction in interviewing should not be delayed until the course in clinical psychiatry, for the student requires these skills while taking other clinical courses.

It is difficult to state how much time the preclinical teaching of psychiatric subjects requires. In certain schools, some of the essential materials may be taught by other departments. The minimum time required to teach personality development and psychopathology adequately will approximate 100 hours. Additional curriculum time is needed for teaching interviewing and history-taking, which may be conducted in

Outline Curriculum for Teaching Psychiatry in the Medical School

conjunction with other departments in the courses preparatory to clinical work. Schools without an adequate psychiatric faculty will do better to limit the teaching rather than spread their efforts thinly or utilize inadequate teachers.

THE CLINICAL YEARS

As the organization of most medical schools was established before psychiatry became a major subject, many medical schools planned their hospital facilities with little regard for the clinical teaching of psychiatry. A number of medical schools, therefore, teach psychiatry in auxiliary institutions such as near-by state or veterans hospitals, or in some inadequate setting such as a segment of a medical service containing a small number of psychiatric patients. Some schools teach psychiatry primarily in the outpatient department, supplemented by use of psychiatric patients who are found on other services of the hospital. A department of psychiatry which conducts an active teaching program and the research necessary to stimulate the members of the department and the students they teach, requires a psychiatric service which it can organize for the teaching purposes of the department and the school. It is estimated that at least 50 beds are required to teach a class of approximately 100 students. A children's inpatient psychiatric service is also extremely useful. The type of service termed an acute treatment service best suits the teaching requirements, provided that some chronic patients can be retained in the hospital. The current trend in medical care, which seeks to provide sections of general hospitals for the screening and short term treatment of psychiatric patients in order to improve psychiatric care

and lessen the burden of the state institutions, fits in with the general needs of the medical schools.

The teaching of psychiatry may also require changes in the curriculum pattern, for psychiatry, just as other subjects, has particular needs that require recognition. The division of the school year into brief, temporal segments presents difficulties for the teaching of psychiatry. Sometime during the third or fourth year, students should have the benefit of following a few patients over a period of six months or longer. Beneficial changes in psychiatric patients usually occur slowly and students may gain pessimistic or hopeless attitudes if they follow patients but briefly. They require the opportunity to learn the benefits of establishing a therapeutic doctor-patient relationship and certain other psychotherapeutic techniques in which alterations in the patients' interpersonal relations and attitudes may occur gradually.

It is considered that the teaching of psychiatry in the clinical years should be concerned primarily with those aspects of psychiatry required for the proper practice of general medicine. However, in emphasizing the teaching of psychotherapeutic medicine, it cannot be forgotten that the proper practice of any branch of medicine requires knowledge of certain aspects of psychiatry proper, including a basic understanding of the psychoses. All physicians require skill and judgment in the understanding and the management of suicidal and excited patients, in recognizing manifest and latent psychoses, in dealing with disturbed people, etc. Further, when properly taught, students can gain deep insight into human motivations from psychotic patients.

A proper education in the psychiatric field requires teaching in three different areas. The time and

emphasis placed on each of these areas will vary with the clinical facilities available and with the orientation of the teaching of each department. The student should have experience with psychiatric problems in children in at least one of these divisions of the program.

1. *Teaching in a psychiatric hospital*, or in a psychiatric section of a general hospital, where knowledge of the major psychoses and the fundamentals of proper treatment of the psychoses can be obtained.

2. *Outpatient work in psychiatry*, where the student becomes familiar with the psychoneuroses and various behavioral problems.

3. *Liaison teaching with other departments*, to further recognition of how personality factors and social problems enter into the treatment of any sick patient.

In addition to these general divisions of the program, lectures or demonstrations of patients may be required to insure a fairly well rounded education in basic clinical psychiatry. A student need not spend time in a mental institution if he can acquire adequate knowledge of the major psychiatric syndromes in a section of a general hospital. However, it is suggested that each student, at least, spend some time in visiting both state and private mental institutions to obtain a clear impression of treatment in psychiatric hospitals. He needs to know where he will be sending patients and what he can expect from such hospitals.

1. Psychiatric Inpatient Experience

An acute treatment center directed by the university department of psychiatry provides a most satisfactory location for the teaching. Here the

student can see a fairly large number of patients diagnostically and learn treatment, management and disposition procedures. Working under supervision, he can participate with increasing responsibility in the study and care of patients. A state hospital is not suitable unless an admitting section of the hospital functions primarily as an acute treatment center and has a staff with a dynamic approach to patients, and can provide supervision by psychiatrists interested and skilled in teaching.

However it is accomplished, the student should have the opportunity to become familiar with psychotic patients and their treatment. He should learn the basic characteristics and something of the dynamics of the development of the following conditions in patients: a variety of schizophrenic reactions, manic states, psychotically depressed reactions, major character disorders, varieties of alcoholism, severe obsessions and phobias, major hysteria; a sampling of toxic psychoses and structural deteriorations of the central nervous system.

The teaching should focus not just upon the syndromes manifested by various patients, but also upon more general matters such as the following: the indications for hospitalization of psychiatric patients, the indications for commitment of patients and commitment procedures, the care of suicidal patients, the care of acutely disturbed patients and the management of disturbed patients outside the psychiatric hospital, the management of the toxic psychoses, the effect of the hospital atmosphere on patients, the various forms of physical therapies and their indications and limitations. It is useful if the student can also gain some familiarity with the following: the utilization of the hospital and the hospital atmosphere

as a therapeutic medium; fundamentals of psychiatric nursing, activities, programs and occupational therapy; the role of the social worker in a psychiatric hospital; the utilization of the psychologist in diagnostic work.

The experience in a psychiatric section of a hospital usually occurs during the third year. The length of time devoted to such work depends upon the remainder of the curriculum. If the hospital experience constitutes the major portion of the psychiatric work, five or six weeks will be required to provide the essential experience. If the curriculum provides for psychiatric outpatient work in the third or fourth year, the students can spend less time in a psychiatric hospital.

2. Work in a Psychiatric Outpatient Clinic

Here the student can learn about a variety of patients frequently encountered in practice: patients with various neuroses, character disorders, ambulatory psychoses, somatic manifestations of emotional conflict, etc. The student should become aware of the mixed character of most disorders and the wide assortment of life problems that bring patients to a psychiatric outpatient clinic, rather than focus upon the diagnosis of textbook entities.

Considerable attention should be given to diagnostic work in the broad sense of arriving at an understanding of the patient's condition and making recommendations for further care. The type of psychotherapy that the student can learn best may be designated as relationship therapy. This requires that he have the opportunity and the time in the psychiatric outpatient clinic to experience the reward of seeing the patients improve

because of his understanding relationship with them. Here the student needs to gain familiarity with the manifestations of anxiety and depression; with various problems that may arouse such emotions, and how patients utilize various defenses to ward off overt anxiety. As marital difficulties complicate many problems encountered in medical and surgical clinics, the student should see and hear about a variety of marital difficulties while working in the psychiatric outpatient clinic. To avoid naivete or undue pessimism, the student should not only treat patients under supervision but also have the opportunity to learn something of how more experienced therapists work.

The very careful supervision of work required in the psychiatric outpatient clinic makes it the most suitable place for the student to learn about the importance of transference relationships and to gain awareness of countertransference problems. That such transference and countertransference manifestations also arise with patients he treats elsewhere, requires emphasis. The student will need guidance lest either the transference or the countertransference impair successful therapy or make his efforts too anxiety-provoking.

In the psychiatric outpatient clinic, the student learns the fundamentals of team functioning, which requires some special instruction from social workers and psychologists. Here too, the student can gain some first-hand experience with the social resources offered by the community and how to utilize them.

Some of the work in the psychiatric outpatient clinic should furnish familiarity with the common behavioral and development problems of chil-

dren. The clinic usually offers an excellent opportunity to observe and study the intimate interrelationships between the problems of parents and children.

3. The Teaching of Psychotherapeutic Medicine

The teaching of a psychotherapeutic approach to the care of patients can occur in all branches of medicine, but particularly in internal medicine and pediatrics. As the medical student usually has the most intensive relationship with patients on the medical ward, it is extremely useful if this experience includes work under the supervision of a psychotherapeutically oriented internist or a medically oriented psychiatrist. Psychiatrically supervised work in medical and surgical outpatient clinics contains advantages, for the patient lives in his home surroundings and the student can become aware of the impact of social difficulties upon the patient. As departments of pediatrics become less occupied with the treatment of infectious diseases and nutritional disorders and turn more and more to the correction of physical and emotional developmental problems, they have become more intimately involved in the psychiatric teaching.

During the fourth year, the student should learn something of the psychotherapeutic approach to medical practice. This usually involves work with social workers as well as psychiatrists. If the physicians working in the medical outpatient clinic have a basic understanding of emotional problems and consider the patient rather than the illness as a focus of the therapeutic effort, the teaching problem is relatively simple. Otherwise, it appears necessary to have a psychiatrist present to help with the teaching. It is suggested that the

student study at least one patient intensively over a fairly long period of time. A proper work-up of patients with so-called psychosomatic disorders such as peptic ulcer, ulcerative colitis, essential hypertension, bronchial asthma, etc., should habitually include an attempt to understand the emotional conflicts and needs which confront the patient at the time he seeks therapy. A satisfactory experience with one or two such patients is more instructive than considerable didactic teaching in psychosomatic medicine. Such work, concerned with the comprehensive care of the patient, requires recognition of the patient's individuality and how personality factors affect the course of his illness. The student is taught the effects of emotions upon physiologic functioning with tangible demonstrations whenever possible. Attention should be called to the precipitation of illness or recurrences of illness during emotional crises. Equally important are the effects of illness upon personality functioning and the difficulties and abilities of adjustment to chronic conditions. How patients use regression as a defense during illness requires particular emphasis. These general problems are of greater importance in preparing the student for practice than are attempts to relate specific personality types to the various psychosomatic illnesses. During his work in the general hospital setting, the student needs to learn the fundamentals of making a proper psychiatric referral and what he might reasonably expect from a consulting psychiatrist.

Either in child psychiatry or in pediatrics, or both, the student needs to see at first hand a variety of the minor behavior problems of children, such as sleeping and feeding difficulties, enuresis, temper tantrums, and negativistic behavior as well as the

more serious psychiatric problems of childhood and adolescence. In addition, an introduction to the problems of the handicapped child—particularly the mental deficiencies—is important to help the student learn the complexities of such situations, what can be done about them, and how he as a physician can deal more adequately with them. Familiarity with the problems of mental deficiency in both children and adults demands a greater interest than in the past. Approximately one in every hundred persons is involved and the physician can not remain relatively unconcerned.

Various other clinical departments provide excellent opportunities for teaching the psychiatric aspects of medical practice. For example: the teaching of preventive medicine lends itself to the study of social problems in the community; obstetrics and gynecology, particularly where natural childbirth and rooming-in are utilized, permit teaching of the emotional aspects of childbirth, motherhood, and the disorders of the female reproductive system; work in surgery affords a great many opportunities for consideration of the emotional problems of patients, particularly concerning differential diagnosis, pre- and postoperative management, the successful induction of anesthesia, the polysurgical patient, and accident proneness.

Conclusion

The committee recognizes that their efforts to outline curriculum content rather than teaching methods, and the avoidance of discussion

of the philosophy of psychiatry in medical school education, has produced an unbalanced report. However, the book "Psychiatry and Medical Education" discusses perspectives of medical education at length. This document simply seeks to expand upon one chapter of the book with the specific purpose of outlining the content of the curriculum in psychiatry.

All of the committee members agree that they seek ways of providing the student with a body of knowledge and skills which will foster a more comprehensive perspective concerning patients and their illnesses, a curiosity about people that will stimulate scientific investigations, and a personal art and skill in the utilization of the doctor-patient relationship. The curriculum should not focus on training physicians to become psychiatrists, but rather upon developing well-rounded physicians, who, in their relationships with all patients, recognize the importance of unconscious motivation, the role of emotional maladjustment in the etiology and chronicity of illness, the emotional and personality problems engendered by various illnesses; and who habitually see the patient in his family and general environmental setting. If such goals are attained, the student's education can and will continue throughout his life.

The Committee on Medical Education of
The American Psychiatric Association
1952 to 1955

Theodore Lidz, M.D., Chairman
Members: Hugh T. Carmichael, M.D.
Bernard Bandier, M.D.
Alan Gregg, M.D.
Robert S. Heath, M.D.
Reynold A. Jensen, M.D.
Frank Lutan, M.D.
John Romano, M.D.
Milton Rosenbaum, M.D.
Aldwyn B. Stokes, M.D.
Raymond W. Waggoner, M.D.

Editorials and Comments

The American Foundation Report on Medical Research¹

FOR THE LAST 15 years, the American Foundation, established in 1924 by Edward Bok, has been making a study of American medical research. The staff, consisting of Esther Everett Lape, Eleanor M. Phillips and Margaret Thomas Edgar, has just published, with the help and advice of an impressive committee of consultants, a two-volume report which covers in a comprehensive, though not exhaustive way, medical research "in the perspective of biological, chemical, physical and mathematical science." The organization of this report is briefly set forth in a review found in the Book Review section of this issue of the Journal (See pp 145). So important to medical educators, however, are some of the findings of the report that they obviously deserve highlighting and editorial comment.

In the foreword of the report, Curtis Bok states "The present survey of far-flung research that contributes to medical progress resulted from the conviction that emerged from our first medical study, (*American Medicine: expert testimony out of court*) that it is useless to discuss the administrative problem of distributing medical care and the economic problem of paying for it without reference to the central need of having a sufficient number of trained physicians capable of providing a type of medical care that can justify elaborate plans for distributing it and paying for it. We are convinced that the only genuine medical insurance for this country lies in making the benefits of science available to all practitioners and to all patients."

In Esther Lape's introductory chapter she states "... the heart of the matter (of medical care) is the need of supporting and expanding research in medicine as a life science involving the whole field of biology and the contributions, in theory as well as in instrumentation, of chemistry, physics, mathematics." She goes on to say "Every dramatic result of research is publicly acclaimed, but the need of the undramatic basic research continuing for years perhaps without direct clinical application is not understood. The public tends to associate the medical research of the past with control of epidemics and abolition of scourges. It tends to associate the medical research of the future with 'discovery' of more and better miracle drugs. It supports drives for 'conquering' cancer and preventing poliomyelitis but still shows little realization of the many fronts along which investigative work must be pursued before there is light on the fundamental mechanisms in any disease, for instance, the nature of atypical growth in cancer."

She concludes, "The most urgent of present national needs in the medical field is thus conceived to be expansion and improvement of medical education integrally related to research, and progressive improvement

of medical practice, steadily lessening the empirical nature of applications of new knowledge to medicine. The medical research involved must be in biological perspective, utilizing the contributions of chemistry, physics, mathematics and the results of research on atomic energy.

"This is the thesis of this study; it is the point of view of the American Foundation, of its committee of consultants and by every implication, of the hundreds of investigators and teachers that contribute to this work."

To the above statements most medical educators would offer a whole-hearted amen. D.F.S.

1. Medical Research: A Midcentury Survey. Volume 1, American Medical Research: in principle and practice. ESTHER EVERETT LAPE, ELEANOR M. PHILLIPS, and MARGARET THOMAS EDGAR. Published for the American Foundation by Little, Brown & Co., Boston 1955.

The Supply of Cadavers

The National Society for Medical Research devoted the November-December 1955 issue of its *Bulletin for Medical Research* largely to problems related to the supply of cadavers, and in so doing highlighted a number of points that are of considerable interest to medical educators.

A questionnaire study made this last summer by the Society revealed that 27 of our medical schools considered their supply of cadavers inadequate and 15 listed their supply as "adequate but not ample." In eight medical schools the supply of cadavers is so inadequate as to make it necessary to assign more than four students to a cadaver for anatomical dissection. Instances in which bodies have been willed to a medical school were reported as common in eight schools, quite common in five schools, and not common in 64 schools.

In 38 states, and the District of Columbia, the individual is not able to will his body to a medical school since in those states the body is held to have value as property and this property value falls to the next of kin. Nine states do, however, have laws enabling a person to will his body to science without fear of having his will broken by surviving relatives. In the state of California willed bodies are reported to be the major source of supply for certain of the medical colleges. Fundamental to the success and continuation of this plan are the handling of the bodies with dignity and respect, and provision for cremation or interment of remains with appropriate funeral services if desired.

Though anatomical laws are in effect in most of the 39 states in which medical schools are located these laws too frequently are not operating effectively, sometimes because state hospital superintendents are not kept fully aware of the medical school needs for unclaimed bodies, sometimes because the Welfare Department stipend for burial of unclaimed bodies is higher than it should be, sometimes because more recently passed laws and conflicting social welfare laws are given preference over the other public health laws. In a recent article reviewing the state laws governing the procurement of cadavers for scientific purposes, Dr. Russell T. Woodburne and Dr. Ernest Gardner make nine recommendations regarding desirable changes in our state anatomical laws.¹

Important among the changes recommended was inclusion of the right of an individual to will his own body to medical science.

The conclusions which can be quite safely drawn from the facts presented in the two studies quoted above are: (1) in every state in which human bodies are needed for research or teaching there should be an Anatomical Board on which anatomy teachers are well represented; (2) Anatomical Boards should periodically review the anatomical laws of their state and recommend changes that will keep them adequate to the changing needs; (3) Anatomical Boards should maintain close liaison with superintendents of state hospitals, and with responsible groups of funeral directors, thus keeping them well informed of the law and the need of the schools for unclaimed bodies and (4) if bodies are to be obtained by bequest in substantial numbers every precaution will have to be taken to handle them with proper dignity and respect and provision made for cremation, burial and funeral services as requested by relatives.—D.F.S.

1. RUSSELL T. WOODBURN, M.D. and ERNEST GARDNER, M.D.: "The History of Anatomical Laws in the U.S.," *Bull. for Med. Research*, National Society for Medical Research, Chicago, May-June 1954.

American Medical Writers' Association

The American Medical Writers' Association, recently affiliated with the American Association for the Advancement of Science, has made rapid growth in the 15 years of its existence. This growth has been especially accelerated in the four years since its incorporation as a not-for-profit organization; its membership, in fact, with a total of nearly 700 on September 1, 1955, had increased by almost 200 during the year.

The purpose of such an organization as the American Medical Writers' Association—defined as "improvement of the written word of medicine"—represents a desire to meet a need much greater than is immediately apparent. This need is not only for an improvement in content of the thousands of medical journals in publication in the world. It is a need for the promotion of much better medical reporting in the lay press than is usually evident, for the assurance of factual and ethical advertising copy, for the preparation of dignified and conservative material for the uses of pharmaceutical houses and, in fact, for all such uses as they concern either the medical profession or the public.

The Association has accomplished much since its incorporation cleared the way for a more vigorous progression. In 1951 it added the publication of a quarterly bulletin to its activities. In 1952 it inaugurated a medical-manuscript-editing service—probably the first such noncommercial service on the continent—and in the same year it established honor awards for American and Canadian medical periodicals for distinguished service in medical journalism, and an annual distinguished-service award to be given an individual member "for distinguished contributions to medical literature or unusual and distinguished service to the medical profession." An honor award is also available to be bestowed from time to time on a nonmember of the Association who has made distinguished contributions to medical literature.

The most important recent result of the Association's activities has been the establishment of three four-year courses in medical journalism and writing, leading to a bachelor's degree, at the universities of Illinois, Missouri and Oklahoma. These courses, activated in September 1954, are in their second full year of operation. A final development has been the establishment in 1954 of a visiting lectureship on medical writing, financed by a grant from Parke, Davis and Company. Under this lectureship, activated in March 1955, Dr. J. P. Gray, director of Special Services of Parke, Davis and Company, has visited a number of teaching centers, where he has lectured to groups of medical students, interns, residents and faculty members.

Encouraging reports on these various enterprises were made at the twelfth annual meeting of the Association, held in St. Louis early in the fall. The three publications selected at that time for awards for distinguished service in medical journalism were *Public Health Reports*, published by the United States Public Health Service, for general medical periodicals with more than 3,000 circulation; *A. M. A. Archives of Surgery*, for specialty periodicals; and the *Bulletin of Sangamon County Medical Society*, in Springfield, Illinois, for periodicals of county and city medical societies of less than 500 members.

"If I have at all learned the trade of using words to convey truth and to arouse emotion," Robert Louis Stevenson wrote in his "Letter on Father Damien," "you have at last furnished me with a subject." The American Medical Writers' Association can rest assured that it is playing some part in promoting the first of these uses.

Reprinted by permission from the December 15, 1955 *New England Journal of Medicine*.

NEWS DIGEST

MEND News

The MEND-sponsored symposium for the spring semester begins February 14-16 at the Great Lakes Naval Training Center. The subject will be "Infectious Disease Problems."

The symposium is designed to present to professors of public health and preventive medicine, bacteriology, internal medicine and pathology, the problems encountered by the military services in a communicable disease area. It will include formal papers by medical officers and civilian authorities and will be pointed toward the needs of faculty members in maintaining teaching efforts in this field. The Navy is primary sponsor of the symposium with invited participation from Army, Air Force and the Public Health Service.

The final symposium of the current session will be on "Radiobiology," April 9-11, at Walter Reed Army Institute of Research, Washington, D. C. The program will include scientific treatments of all the medical implications of radioactive materials in both civilian and military usage as related to man. Papers and panel discussions will concern the acute and chronic effects of radioactive materials upon man, from flash burns to genetic effects; symptomatology, diagnosis and treatment of various types of radiation disease; medical problems expected to appear from increasing use of nuclear reactors in civilian enterprise, military problems in maintenance and repair of atomic-powered vehicles of all types. Stress will be placed on the needs of faculty members in handling this primarily new information. The Army is the primary sponsor of the symposium with participation by several other government agencies. Faculty members interested in attending are re-

quested to reserve space as soon as possible with the National Coordinator, MEND, Bureau of Medicine and Surgery, Department of the Navy, Potomac Annex, Washington 25, D. C.

A tentative program has been prepared for the MEND coordinators conference which will be held on February 12, 1956 at the Palmer House, Chicago. The plan is to assign a group of topics, one to a coordinator, who will be asked to present his views and then call for general discussion from the group. The program is set up as follows:

1. Philosophy of the MEND Program—panel discussion;
2. Selling the faculty on MEND;
3. "Flavoring" the existing curriculum;
4. Visiting speakers;
5. Films and teaching aids;
6. Symposia and faculty travel;
7. MEND teaching projects:
 - A. First aid instruction and orientation for freshmen
 - B. Two-day course in mass casualty care; Seattle
 - C. Field trial of a mobile emergency hospital; Houston (11" color documentary film)

This session is intended to be a "pump-primer" for the coordinators and deans' tour to take place during March.

Coggeshall Named Aid

Dr. LOWELL T. COGGESHALL, dean of the University of Chicago School of Medicine, has been named by President Eisenhower as special medical and health affairs assistant to Health, Education and Welfare Secretary Marion Folsom. Dr. Coggeshall, on leave from the university for one year, will review government health and medical programs and advise Secretary Folsom on suggested legislation. He has expressed himself as interested in advocating increased

strength of the nation's medical research facilities, especially in the area of the basic sciences, and in endeavoring to find some solution to the mounting cost of medical care without imperiling the spirit of free enterprise.

Commonwealth Fund Grants \$1,954,071

The Commonwealth Fund's emphasis upon grants for medical education resulted in appropriations totaling \$1,954,071 in 1955. Support was given to 27 institutions for activities directly related to this field.

The money was apportioned to provide further study in projects such as the relationship between medicine and social science; the social psychology of illness; and curriculum experimentation to provide better learning experiences for students. Some appropriations were also made toward administrative costs.

In addition the fund provided 28 individual awards for advanced fellowships in the health field. The chief objective of these awards was to enable the receivers to secure added training which would, in turn, make possible the strengthening of an institution's educational program.

Dr. Youmans Heads Study

Dr. John B. Youmans, dean of Vanderbilt University School of Medicine and president-elect of the Association of American Medical Colleges for 1956-57, has assumed the directorship of two government teams now undertaking nutritional investigations in the military forces of Iran and Pakistan. The project is part of the U.S. technical assistance program for friendly nations in the Near, Middle and Far East, and the supervisory agency is the departmental committee on Nutrition for National Defense whose chairman is Dr. Frank B. Berry, assistant secretary of defense. Dr. Youmans, on leave from Vanderbilt, is replacing Dr. Harold R. Sandstead, who was killed in a Colorado plane crash Nov. 1.

More Rapid Army Promotions

Recognizing the long and expensive training required of doctors before they can qualify for Army commissions, Maj. Gen. Silas B. Hays, Army Surgeon General, has announced that physicians will be eligible for temporary promotion one year sooner than other army officers. These are promotions to the grade of major, lieutenant colonel and colonel. Consideration is also being given to more rapid promotion of lieutenants to the grade of captain.

As a result of this policy, it is estimated that 390 medical officers will be promoted to higher grades during the period ending June 30, 1956.

\$401,960 for Hospital Research

The Public Health Service has awarded \$401,960 in grants for hospital research. Eligible for the grants are states, counties and communities, universities, hospitals and other non-profit institutions. Work must be directed toward developing new information on the use of hospital services, facilities and resources.

Proctology Seminar

The 8th annual teaching seminar of the International Academy of Proctology will be held at the Drake Hotel in Chicago, April 23 to 26, 1956. The international, national and local program committees are planning a seminar on anorectal and colon surgery. There will be special emphasis on anorectal presentations and panel discussions.

Markle Foundation Report

The John and Mary R. Markle Foundation's 1954-55 annual report reveals an income of over \$1,000,000 for the first time in its history. Of this, the largest share was appropriated to continue the program in support of Markle Scholars. The largest single grant went to Stanford University to assist in consolidating its

medical school on the Stanford campus. The foundation also continued to help support studies relating to medical students conducted by the Association of American Medical Colleges. These studies included such subjects as the cost to the student of attending medical school, success of older students in medical schools, and research on women in medicine and the extent to which they practice.

Tobacco Research Grants

Research grants approved by the Tobacco Industry Research Committee passed the \$838,000 mark with 19 new grants and nine renewed grants announced at the end of 1955. The new grants and renewals totaled more than \$355,000. They will be used for research into tobacco use and health by independent scientists at recognized hospitals, laboratories and medical schools throughout the country.

New Publication

A new publication, the first weekly newspaper of its kind for physicians and their associates in the medical profession, was introduced on January 2 by the Upjohn company, pharmaceutical manufacturers of Kalamazoo, Michigan. Entitled "SCOPE Weekly," a service to the

medical profession by Physicians News Service, Inc., it is designed to bring to physicians current news and information of medicine and related sciences.

New Fellowship Program

The National Foundation for Infantile Paralysis has instituted a new fellowship program for surgeons interested in advanced study to prepare themselves for teaching or research in orthopedics. Appointments will be made for one year but renewal of the fellowship may be requested. Complete information regarding this program can be obtained by writing to the Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York.

Cancer Grants

The Damon Runyon Memorial Fund for Cancer Research ended the past year with grants totaling \$92,205. Dan Parker, fund president, announced that no money received by the fund has been used for administrative expenses. The allocations have been made in 609 grants and 327 fellowships in 205 institutions in 48 states, the District of Columbia and 16 foreign countries.

College Briefs

Buffalo

The school of medicine will embark in September 1956 upon an experimental project in the training of medical teachers. This program, which has been made possible by a grant from the Commonwealth Fund, will have the cooperation and assistance of the school of education and the college of arts and sciences. It will be directed by Dr. GEORGE E. MILLER, assistant professor of medicine.

The purpose of the program will be to determine whether the development of increased faculty familiarity with fundamental educational principles can make a significant contribu-

tion to the betterment of medical education. Four visiting faculty positions will be offered for this period to faculty members of other medical schools who might wish to participate in this program.

U. of California

RICHARD J. STULL has been appointed to the new post of vice president—medical sciences at the university. In this post he will hold statewide administrative responsibility for the university's teaching, research and service programs in the health sciences.

The university has also announced the appointment of Dr. JOHN B. de C. M. SAUNDERS, former chairman of the department of anatomy, as dean of the school of medicine, San Francisco.

Cincinnati

The National Foundation for Infantile Paralysis has made a grant of \$200,797 to the University of Cincinnati and Cincinnati Children's Hospital Research Foundation for continued research toward a live virus vaccine, under the direction of Dr. ALBERT B. SABIN, professor of research pediatrics and fellow of the hospital foundation. This is the largest grant made by the foundation in Ohio for 1956 and one of the largest in the nation. Dr. Sabin, whose research has received 16 grants from the foundation in the past, announced on his recent return from Europe that he has made arrangements for cooperation in a number of foreign countries on studies related to his poliomyelitis research.

Duke

Former surgical residents among Duke University Medical Alumni have appointed a committee to organize the "Deryl Hart Society" in honor of Dr. DERYL HART, professor of surgery. Purpose of the society will be to promote surgical teaching and research, as well as to add to general knowledge in the field of surgery through annual meetings.

Emory

An unrestricted grant of \$600,000 from the Commonwealth Fund has been received by the university and will be used to strengthen its educational service in the further development of Atlanta as a regional medical center. Emory also has announced the appointment of Dr. DANIEL C. ELKIN, professor emeritus of surgery and former head of the department of surgery, as president-elect of the American College of Surgeons. Dr. J. ELLIOTT SCARBOROUGH, director of

the Winship Clinic at Emory University Hospital, has been elected to the national board of directors of the American Cancer Society.

Georgetown

Two new research grants have been given to the medical center by the Public Health Service. They total \$28,290 and will be used for a project in cardiovascular and cardiovascular replacement and to study the chemotherapy of hypertension.

Harvard

Announcement has been made of the appointment of Dr. DAVID G. FREIMAN to the posts of pathologist-in-chief and director of laboratories at Beth Israel Hospital, and clinical professor of pathology at the Harvard Medical School. Dr. Freiman was formerly director of the Bethesda Hospital laboratory and professor of pathology at the University of Cincinnati School of Medicine.

Dr. CHARLES CARROLL LUND, Boston surgeon, whose research has made important contributions to studies of protein metabolism in surgical patients and the treatment of burns and cancer diagnosis, has been appointed clinical professor of surgery.

Jefferson

Dr. HEINRICH BRIEGER, professor and director of the division of industrial medicine at Jefferson Medical College, has received a grant of \$22,000 from the Atomic Energy Commission for research on the effects of radioactive particulars in lung tissue.

Kansas

Research grants totaling \$109,038 have been awarded the Medical Center by the National Advisory Councils of the Public Health Service.

Dr. GLEN R. SHEPHERD, assistant professor of medicine and administrative assistant to the dean, has been appointed to the post of assistant secretary of the American Medical

Association Council on Medical Education and Hospitals.

Medical Evangelists

A new anatomy amphitheater seating 178 has been completed on the Loma Linda campus. This \$100,000 addition will aid in teaching and will serve as an additional site for group meetings.

Meharry

Grants-in-aid for current projects at the Meharry Medical College total \$154,770, the highest for any single year in the school's history. Grants for new projects and renewals of grants for established projects have been awarded by the National Institutes of Health of the Public Health Service, the Atomic Energy Commission, the American Cancer Society, the Josiah Macy Jr. Foundation, the National Science Foundation and Hazelton Laboratories. They cover the general fields of nutrition, metabolism, radiobiology, radiation therapeutics, immunology and cancer research.

SUNY—Brooklyn

The College of Medicine in Brooklyn has received \$24,000 from the Josiah Macy Jr. Foundation to sup-

port a program of student research scholarships in the field of reproduction. The grant will be divided into five awards of \$4,800 to provide eight Josiah Macy Jr. Foundation scholarships in reproduction each year. Student winners will receive \$500 each, the balance to be used for laboratory expenses.

N.Y.U.—Bellevue

Dr. ARTHUR ZITRIN, assistant clinical professor of psychiatry at New York University College of Medicine, has been appointed director of the psychiatric service of Bellevue Hospital Center, succeeding Dr. LEWIS I. SHARP who has been director for the past seven years. Dr. Sharp will continue on the teaching staff of the department of psychiatry.

Final plans have been made for the construction of Alumni Hall at New York University-Bellevue Medical Center. The fourth building of a \$32 million development program, the hall will be provided with the most modern equipment for stereoptical slides, moving pictures, television and various other features of audiovisual aids as well as for demonstration purposes. It is scheduled for completion in 1956.



CORRECTION:

The \$28 million West Virginia University Medical Center now under construction is shown in this aerial photograph. From the mechanical plant in the foreground a 750 foot utilities tunnel sweeps back to the basic sciences building. To the left of the latter building is the site of the teaching hospital and clinic. In our January issue we inadvertently captioned this picture as the Virginia University Medical Center. We sincerely regret this error.

Audiovisual News

The Use of TV in Teaching Physiology and Anatomy

FRANK M. WOOLSEY, DAVID S. RUHE, MORTON J. OPPENHEIMER*

WILLIAM T. KABISCH, GEORGE D. DAVIS, J. EDWIN FOSTER

The television camera is, for many practical purposes, a magnifying glass held by the teacher between a small field of observation and a class of observer-learners. For example, the TV camera may be held in front of an exposed nerve for sufficient magnification to permit the whole class to see it on the TV receiver or the camera may be held in front of a microscope to multiply the magnification already achieved by the microscope. The experiences in using the magnifying glass of television for the teaching of physiology and anatomy intramurally in medical schools is herewith presented by the authors.

The Reasons for Initiating Television

The authors represent five institutions presently using television for teaching the basic sciences. These schools are Temple University School of Medicine, Albany Medical College, University of Chicago School of Medicine, Louisiana State University School of Medicine, and the University of Kansas School of Medicine. The reasons and circumstances for initiating television in these widely

separated institutions are varied.

At Temple University School of Medicine, Dr. Herbert M. Stauffer saw television as a logical extension of a fluoroscopic image amplifier with a viewing screen of only 25 mm. diameter. Television enlargement of the image could conceivably permit large groups to see fluoroscopy in the same room or at a distance.

At Louisiana State University School of Medicine the increasing volume of facts in physiology which were transmitted by laboratory demonstrations on animals—many of which cannot be performed by the students themselves for reasons of time, cost and difficulty of technique—suggested that TV might become the extension of the demonstrator's power to show small details.

At the University of Chicago School of Medicine Dr. I. Gersh, then in charge of gross anatomy (1951), approached Dr. William Adams, of the department of surgery, regarding the feasibility of using surgery to give freshmen medical students some appreciation of the color, consistency and plasticity of living tissues and organs. The practical difficulties of having 10 or more students view the surgical procedures from the operating room floor tended to preclude this type of observation and suggested color television with two-way oral communication between the surgeon and the student observers,

Dr. Woolsey is associate dean and director of post-graduate education, Albany Medical College of Union University; Dr. Ruhe is chairman of the department of audiovisual education and associate professor of preventive medicine and public health, University of Kansas Medical Center; Dr. Oppenheimer is chairman of the department of physiology, Temple University School of Medicine; Dr. Kabisch is instructor in anatomy at the University of Chicago School of Medicine; Dr. Davis is assistant professor of physiology, Louisiana State University School of Medicine; and Dr. Foster is director of the Medical Audio-Visual Institute of the Association of American Medical Colleges.

*Supported by Grant HT-5041, United States Public Health Service.



AT THE UNIVERSITY OF KANSAS School of Medicine television provides the surgeon's eye views of the operative field for the students who actually witness the surgery in a gallery classroom. Slides, motion pictures, blackboard (with ultra-violet light and fluorescent chalk) and view boxes permit a range of teaching approaches to surgery as living anatomy.

guided by the anatomy instructor.

At Kansas University Medical Center one use of color television was conceived to be an aid in achieving motivation toward clinical medicine in freshmen separated geographically from the hospital and clinical faculty. Secondly it was used to present surgical anatomy in the living patient to the first year students receiving their formal course in anatomy.

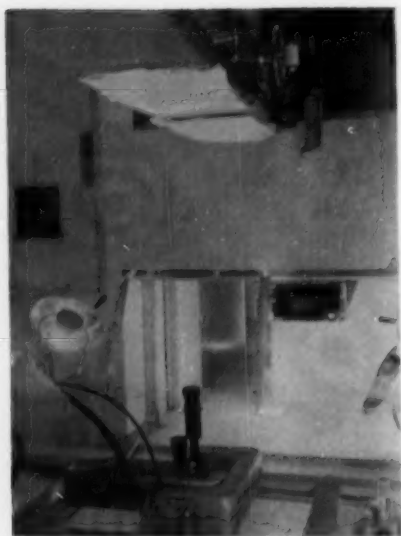
At Albany a grant providing limited funds for the purchase of equipment and initial technical aid helped satisfy the desire to explore the feasibility and practicality of intramural TV.

Thus, in the schools presently employing television for teaching physiology or anatomy it is used principally as an answer to the problem of presenting small fields of phenomena to larger groups or to a whole class of students.

Learning Experiences Provided by Television

The use of medical television in the past six years has raised the question as to what learning experiences can be effectively or efficiently provided by television. It appears that television can be used to enhance certain demonstrations regularly performed.

For example, at L.S.U. television is being used to demonstrate the reaction of the heart to nerve stimulations, drug injections and defibrillation procedures; the secretory activity of various glands; the movements of extremities in response to cerebral cortical stimulation; isometric muscle contractions and reflexes; and manipulative and surgical techniques of physiology such as cannulation, nerve exposure and muscle preparation.



TELEVISION CAMERA fixed above an operating table in the Nathan Goldblatt Memorial Hospital at the University of Chicago. The monitor and control unit may be seen in the background behind the glass panel. This unit is operated by a lab technician with television training. (This and the following two photos made under the direction of Willard Webber, television coordinator.)

At Chicago demonstrations in surgery are being done with less disturbance to the operating room routine, with superior visibility and accommodation of greater numbers of students. In addition the demonstrations are kept "live."

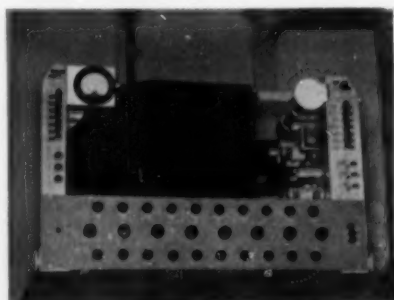
At Albany television is similarly used to enlarge the field involved in surgical operations. As in the case in basic science demonstrations at Albany, special lighting is not required, which is an added attractive feature.

The University of Kansas Medical Center has used surgical TV with freshmen students for the purpose of motivation. The first year students at Lawrence are separated by 40 miles from the medical center at Kansas City. During orientation week in 1954 the freshmen were brought to Kansas City by bus and, as part of their orientation-stimulus activities, wit-

nessed surgery from the surgical gallery; television added big closeups of the operative fields.

Television is virtually essential for certain demonstrations. For example, those demonstrations of electrophysiological techniques which use the small oscilloscope screen can be viewed by a whole class only when television is employed. The same holds true in the case of electroencephalography where the recording machinery is in a small room which makes ordinary demonstrations of the equipment practical only for very small groups at a time.

It should be emphasized that the TV-image amplifier combination has eliminated the need for dark adaptation and has increased sharpness of the image because central or cone rather than rod vision is used. Filling of the gallbladder with cholografin and flow into the liver duct radicles are examples of gastrointestinal applications. The behavior of the esophagogastric junction and of gastric and intestinal peristalses are now easily taught to groups where before these could not be done. Swallowing and the behavior of the epiglottis can easily be seen. The crista interveniens of Lower¹ could hitherto be demonstrated only by dissection or X-rays. (The crista interveniens represents the ridge that intervenes between the anterior caval channel and the via dextra or right terminal division of the posterior caval channel.)



CLOSE-UP of the television monitor and control unit of the University of Chicago.



AT THE UNIVERSITY OF Chicago the television receiver is located in a conference room. The coordinator communicates with the surgeon by means of a telephone hook-up. The surgeon's comments are broadcast to the viewers by way of the speaker unit* on the lower right center of the receiver.

Location of Equipment

The equipment in the five institutions is used for intramural teaching and therefore both the camera and receivers are housed either in the same room or in rooms which can be connected by coaxial cable. At Temple, Albany and Kansas the portable equipment is taken ordinarily to the laboratory or area most suitable for the demonstration and therefore the camera and receivers are in the same room. At L.S.U., the students and demonstrations are kept in different rooms for two reasons: one, observers and some class members feel that the elimination of distracting activities of the assistants was of considerable help in concentrating on the visual and auditory information being presented via the receivers; two, the demonstrators liked the freedom of movement gained by working in a larger, better equipped laboratory adjacent. It should be noted that orientation is achieved by having a staff member in the lecture room supplementing the commentary and relaying questions by telephone to the demonstrator. Further, the class is invited to inspect the actual preparation and equipment after the demonstration is over.

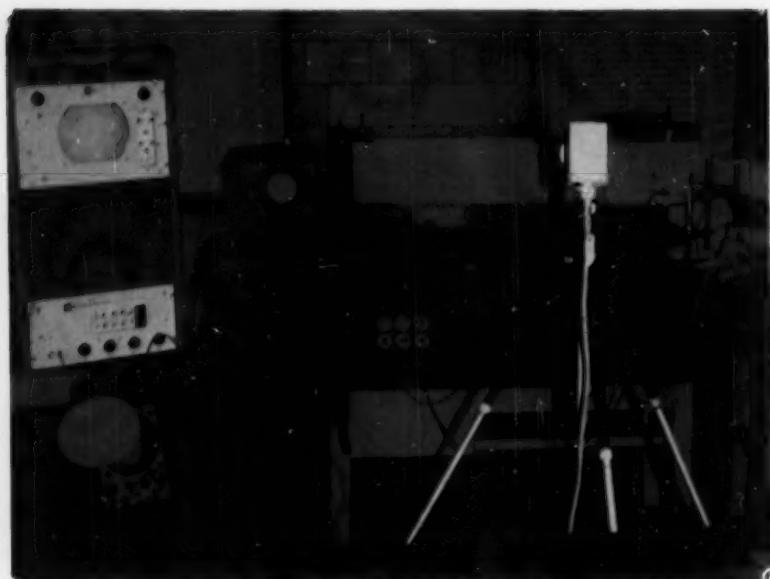
At all locations TV is used from remote points of orientation at least on occasion. At Temple the camera is placed in front of the image amplifier in the physiology X-ray room

and coaxial cable carries the picture to the laboratory or lecture room. When surgical operations are televised at Albany the picture is carried to an audience in a conference room; there is two-way audio communication with the operating room. At Chicago, where the surgical TV is used by anatomy, the camera is fixed in an operating room five floors above the classroom, with audio intercommunication. At Kansas, television of surgical anatomy is carried from the surgical suite to any classroom where reception is desired.

The Equipment Used

Experience and satisfaction is being gained with a variety of equipment. At L.S.U. the basic equipment is a KAY-LAB black and white vidicon camera chain now costing about \$2,500. Two 21" standard make, table model receivers cost \$360. Cables, 16 mm. lenses, tripod, sound amplifier and other accessories brought the total initial cost at present prices to about \$3,400.* Black and white TV appears to be adequate for the teaching of physiology; certain phenomena are rendered even more visible: for example, the papilla of the pancreatic duct on the duodenal wall is considerably more visible, through increased contrast, on the monitor

*Supported by the National Fund for Medical Education.



THE KAY-LAB camera chain used at Louisiana State University School of Medicine.

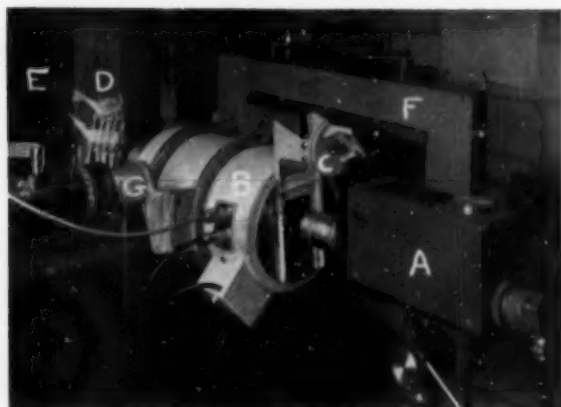
and class television screens than it is in the actual dog.

At Albany "image-orthicon" type black and white equipment similar to that of commercial studios was constructed and in some instances specially designed by their own director of electronics (Charles Schaffer). Camera sensitivity and definition is very good. It is felt that with the use of presently available compatible color equipment which can maintain definition comparable to black and white the usefulness of the medium would be augmented. However, it is felt that the cost and operation of color equipment is still relatively too expensive.

Temple uses an RCA Industrial Vidicon Television Camera Chain, black and white, with a monitran sound track which can be used in association with the television. A word about extra receivers used at Temple is pertinent. Both video and video-modulated radio frequency outputs for extra monitors are provided

in most camera monitors. For maximum image quality the straight video is used with a video monitor. However, with only slight image deterioration, any standard television receiver of any size may be used by connecting its antenna terminals to the camera monitor's RF output through a coaxial cable. The output is adjusted to one of the standard television channels and the receiver set to the same channel. In the interest of economy, secondhand receivers have been used with good results. Up to 10 or more receivers may be operated simultaneously at considerable distances from the camera monitor.

The equipment at Chicago and Kansas is Remington Rand CBS Vericolor. Chicago and Kansas use 10.5" receivers with magnifier bubbles. Kansas has nine of these receivers. In addition both Kansas and Chicago have large screen projectors recently made available by the American Cancer Society. The screen image is $4\frac{1}{2}' \times 6'$.



EQUIPMENT USED at Temple University School of Medicine. "A" is an RCA industrial television camera; "B" is a Philips Image Amplifier; "C" is a rotating support for a motion picture camera; "D" is pressed wood equal in density to a 28 cm. human chest supporting the skeleton of a hand; "E" is a vertical fluoroscope table with X-ray tube source behind it; "F" is a fluoroscope screen held at a right angle to the fluoroscope table, and "G" is the supporting stand for the image amplifier.

Cost or Investment

Television is expensive, but when considered in the light of increased time made available by it for teaching and its ability to present things which were not demonstrated well before, it is mutually agreed that it is possibly not excessive. At L.S.U. it is felt that the investment in the black and white vidicon system has been well repaid in terms of increased teaching capabilities, with the added bonus of valuable experience, much of which can be applied to work with color TV in the future. At Chicago it is obvious that the installation of color equipment solely for the use they are making of it in gross anatomy would be considered very expensive; however, a recognition and full employment of TV teaching capabilities in other courses would cause a downward revision in the estimation of its cost. At Kansas, with the longest and heaviest use and experience with color TV, returns upon the large investment are being followed as closely as an experimental situation permits. An accurate appraisal of values cannot fairly be computed at this time. Certainly costs and economies must be weighed and compared.

The Future

The short past of television has

brought satisfaction to the authors, and the potential has barely been explored. There are very few categories of medical education in which TV cannot be used successfully as a visual aid. The full employment of television will near realization when its use becomes as familiar and natural as the use of microscopes, slides, dissections, films and the like. As more people gain actual experience in using TV there will be better selection and more efficiency in arranging program materials.

It is evident at Temple in particular that correlations cutting across departmental lines* will extend future application. Here the association in physiology with the departments of roentgenology and medicine has been very fruitful. For example, in conjoined research with these departments TV has visualized the use of carbon dioxide gas in the intracardiac structures in situ and demonstrated the safety of this gas². The in situ behavior of heart valves in the opened chest has already been demonstrated to classes by means of TV. Clinically, TV has been used with the image amplifier in neurosurgery to place Horseley-Clarke electrodes, in preparation for heart surgery to observe angiocardiology, in gastroenterology to demon-

*With Dr. T. M. Durant, Dr. H. M. Stauffer and Mr. George Stewart III.

strate cardiospasm and disturbances in swallowing, and in orthopedics to visualize venous drainage from bodies of vertebrae.

A prediction of the future of television in teaching physiology and anatomy requires more experience and study than is presently available. It would seem safe to say that it will be used for several purposes. First, television can better teach certain phenomena that are now being taught by other means. There is no question of its ability to enlarge macroscopic materials for large group observation. Second, television will be used to teach things that have been impossible or impractical to present before. Just as the advent of the microscope augmented research and teaching, it is safe to predict that the most significant role of television in anatomy and physiology, as in all medical science, will be to observe and communicate phenomena previously beyond the scope of available research and teaching tools.

REFERENCES

1. STAUFFER, H. M., OPPENHEIMER, M. J. et al.: *J. Applied Physiol.*, November 1955.
2. OPPENHEIMER, M. J.: "Cardiovascular Teaching," Report of the First Conference of Cardiovascular Teaching Grant Program Directors, held at Ithaca, N. Y., June 2-3, 1954. Grants and Training Branch, National Heart Institute,

N.I.H., Public Health Service will supply copies of this report.

3. ROSENBLUTH, A. and RAMOS, J. GARCIA: *Arch. Inst. Cardiol. Mex.*, 17:1, 1947.
4. SHERF, D. and TERRANOVA, R.: *Am. J. Physiol.*, 159:137, 1949.
5. OPPENHEIMER, M. J. and LYNCH, P. R.: *Fed. Proc.* 14:109, 1955.
6. STAUFFER, H. M. STEWART, G. H., III and CHAMBERLAIN, W. E.: *Fed. Proc.* 14:144, 1955.
7. OPPENHEIMER, M. J.: Paper No. 118, pp. 20, *Joint Meetings American Physiological Society at Medford, Mass.*, September 6-9, 1955.
8. MORGAN, R. H. and STRUM, R. E. *Am. J. Roentgenol.* 70:136, 1953.
9. HENNY, G. C., STAUFFER, H. M. et al., *Confinia Neurologica*, 14:391, 1954.
10. SCHAFER, PAUL W. "The Kansas Television Experiment," *J.A.M.A.*, 152, 554-557, 1953.
11. SCHAFER, PAUL W.: "Television at the University of Kansas Medical Center," *J.A.M.A.*, 152, 78-82, 1953.
12. RUHE, D. S. and KLEIN, M. R.: "Color Television at the University of Kansas Medical Center," *Proceedings of Workshop on Television in Postgraduate Medical Education*, American Medical Association, February 1955 (unpublished).
1. LOWER, R.: "Tractatus De Corde. Item De Motu et Colore Sanguinis et Chyli in eum Transitu," London, 1669, (Gunther's Early Science in Oxford, Vol. 9). Oxford: printed for the subscribers.
2. STAUFFER, H. M., OPPENHEIMER, M. J., DURANT, T. M., and LYNCH, P. R.: *Clinical Research Proc.*, 3:107 (No. 2, April), 1955.

Book Reviews

Medical Research: A Midcentury Survey

Eather Everett Lapes, Eleanor M. Phillips and Margaret Thomas Edgar for the American Foundation. Little Brown and Company, Boston, 1955. Two volumes—Vol. 1 of 765 pp., Vol. 2 of 740 pp. \$15.

The American Foundation was established by Edward Bok in 1924. This is the fourth report to be published by the Foundation on studies completed in quite widely separated fields. Study I concerned itself with "the role in international relations of the judicial settlement of international disputes and the progressive codification of international law." Study 2 documented "the relations of record between the United States and the Soviet Union." Study 3 set forth "the principles involved in ways of distributing and paying for medical care."

This study, study 4, attempts to describe and summarize "research in biology, chemistry and physics in relation to the maintenance of high standards of medical education and of medical care for the whole population." It grew out of the conviction arrived at in Study 3, "that it is useless to discuss the administrative problem of paying for it without reference to the central need of having a sufficient number of trained physicians capable of providing a type of medical care that can justify elaborate plans for distributing it and paying for it."

Volume I is devoted to a discussion of the biological basis of medicine, to the contributions of chemistry, physics and mathematics to biological and medical research, to the conditions affecting basic research in the foundation, the voluntary health agencies, the pharmaceutical laboratories, the endowed research institutes and the universities and medical schools. It summarizes the trends in financing research, describes the evolving role of government in research and points out the social influences which come to bear upon medical research and medical investigators. A round-up of medical research projects currently going on in a dozen of our universities serves as a fine sample, though a select one, of the contributions higher education is making. Of particular interest to medical educators is the

section on the trends in financial research. Volume 2 attempts to point out the currently most obvious unsolved problems in the 10 important fields of metabolism, cancer, infertility, arteriosclerosis, hypertension, the rheumatic syndromes, tuberculosis, urology, alcoholism and schizophrenia.

Though this study encompasses a tremendous number of research fields it would appear from the comments made by authorities in these various fields that the summary in each of the fields has been skillfully and fairly done. All seem in agreement that this two volume work should be of real interest to all medical investigators and to many researchers in related fields. Medical education and the medical profession as a whole owe the authors and the American Foundation a real debt of gratitude for this painstaking and comprehensive report of a 15-year study.

Dean F. Smiley, AAMC

Adaptive Human Fertility

Paul S. Henshaw, Ph.D. McGraw-Hill Book Company Inc., New York, 1956. 322 pp. with Index. \$5.50.

Dr. Henshaw's book is absorbing and indeed fascinating. He has taken upon himself the herculean task of not only defining man's place in nature's scheme, but also of making concrete suggestions toward the fundamental objective of long-range progressive improvement of human welfare. He approaches this from group behavior, cultural mores, demographic trends, health conditions, down to sexual expression, and shows that in the last analysis the considerations must inevitably come back to the behavior of individual couples.

He has the ability to see the problem in its "gestalt" and widest scope and the facility to express this lucidly while clearly pin-pointing minutiae and essential factors, and finally reducing it to a potent message—"to give attention to population growth, for when brought face to face with the implication many of us have a tendency to say that such matters are beyond us and must be handled by those more qualified and in a better position to understand their mean-

ing. It is clear, however, that the steps we take each day as individuals are the elements that fix the direction of man's progress. Indifference to social problems shields no one from the necessity of assuming responsibility for the direction social progress actually takes."

It is a pleasure to recommend this book to every thinking adult.

S. J. Behrman, Michigan

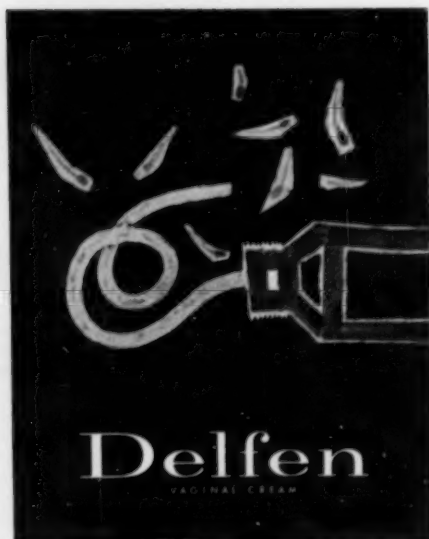
Cardiac Diagnosis: A Physiologic Approach

Robert F. Rushmer, M.D. W. B. Saunders Co., Philadelphia, 1955. 447 pp. with index.

As the author states in the preface, this book represents an approach to cardiac diagnosis based on the function and control of the heart under normal and abnormal conditions, emphasizing the mechanisms by which disease processes produce signs and symptoms. The reviewer's opinion is that this object has been achieved in an interesting and readable manner. The two column per page text is supplemented with 234 figures of line drawings and photographs consecutively numbered for each of the 20 chapters and 11 tables of data.

The book is organized into five major sections: the anatomic, physical and functional aspects of the cardiovascular system as a whole; the regulation of the cardiovascular system with emphasis on modern concepts of neural and hormonal control; the etiology of congestive heart failure and the role of cardiac reserve; the methods of cardiac diagnosis, both old and new, together with their physiological basis, methods and limitations; and the last section discusses rather completely the five principal categories of heart disease. It is difficult to single out any particular section of the book as outstanding, although the chapters on heart sounds and murmurs, cardiac reserve and valvular disease merit praise. The text of each chapter is well documented with references to recent publications as well as to the basic earlier work in this field.

The reader may not always agree with the single, concise viewpoint often expressed by the author on a particular controversial subject; but for once the reader is not confused by an infinite number of theories without direction in the author's physiologic approach to cardiac diagnosis. This book should be of considerable interest to all students



new...

medically,

DELLEN is the first contraceptive CREAM reported to be clinically effective when used alone.

pharmaceutically,

DELLEN is an oil-in-water emulsion—a cream.

chemically,

DELLEN Cream contains the highest concentration of the most potent, nontoxic spermicide ever discovered.

clinically,

results to date show DELLEN Cream to be highly active, very esthetic and nonirritating.





Ortho

MOST SPERMICIDAL CONTRACEPTIVE

Delfen

VAGINAL CREAM

HAS THE...

highest concentration
of a new most potent,
nontoxic spermicide



effective

The action of DELFEN vaginal cream is almost exclusively chemical. So potent is this new chemical spermicidal agent that DELFEN vaginal cream is first by far in three leading tests of spermicidal potency.*

*Sander-Craiger, Wharton and Zane tests.

acceptable

Clinical experience emphasizes the esthetic acceptability of DELFEN vaginal cream. It is snow white and has a pleasing consistency. It is emollient, not unduly lubricating and does not leak. These features, plus the fact that it is nonirritating, evoke favorable response from patients.



of medicine, those at the undergraduate level as well as those in practice.

A. N. Taylor, Oklahoma

Diseases of the Ear, Nose and Throat

William Wallace Morrison, M.D. Appleton-Century-Crofts, Inc., New York, 1956. 756 pp. with index.

In this revision of a textbook specifically written for undergraduate students and general practitioners, Dr. Morrison has succeeded in concisely presenting an abundance of selected clinical data. It is written simply and with discernment. The viewpoint is the broad one of the physician as well as that of the otorhinolaryngologist.

The physiological approach to the understanding and therapy of the specific diseases of the ear, nose and throat, and their impact on the organism, is in evidence throughout. The discussions on the use of antibiotics and chemotherapy are particularly well done. The futility and possible dangers of the indiscriminate use of antibiotics in the treatment of virus infections of the upper respiratory tract is stressed.

The subject index is complete and in addition there is a unique and valuable symptom index. The line drawings are adequate to illustrate anatomical and surgical points; however, kodachromes of the appearance of specific disease states involving the eardrums and throat would have been desirable.

H. Sherwood Lawrence, N.Y.U.

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Handbook of Physiology and Biochemistry

R. J. S. McDowell, Blakiston Division, McGraw-Hill, New York, 1956, 769 pp. with index.

Planning New Institutional Facilities for Long Term Care

Edna Nicholson, G. P. Putman's Sons, New York, 1956, 358 pp. with index.

Modern Nutrition in Health and Disease

Edited by Wohl and Goodhart, Lea & Febiger, Philadelphia, 1955, 1962 pp. with index.

Talking With Patients

Brian Bird, M.D. J. B. Lippincott Company, Philadelphia, 1955, 154 pp. with index.

FEBRUARY 1956, VOL. 31, NO. 2

more than
42,000,000
doses of ACTH
have been given

HP*ACTHAR[®] Gel

The Armour Laboratories brand of purified
adrenocorticotrophic hormone - corticotropin (ACTH)

Unsurpassed in safety and efficacy

In a series of patients treated continuously with Armour ACTH for at least 5½ years¹...

- Each responded with a maintained increase in cortical function
- Major and minor surgical and obstetrical procedures caused no incidents
- Sudden discontinuance of ACTH did not provoke a crisis



...and HP*ACTHAR Gel should be used routinely to minimize adrenal suppression and atrophy in patients treated with prednisone, prednisolone, hydrocortisone and cortisone.

HP*ACTHAR[®] Gel is the most widely used ACTH preparation
*Highly purified

1. Wolfson, W. Q.: Mississippi Valley M. J. 77: 66, 1956.



THE ARMOUR LABORATORIES
A DIVISION OF ARMOUR AND COMPANY • KANKAKEE, ILLINOIS

The Personnel Exchange

Faculty Vacancies

• **NUTRITIONAL BIOCHEMIST:** Assistant professor, teaching of medical and graduate students with excellent opportunity for independent research. Address: Edwin H. Shaw Jr., department of biochemistry, University of South Dakota, Vermillion, S. D.

• **HISTOCHEMIST OR BIOCHEMIST:** Wanted for basic research in department of ophthalmology. We already have a fairly large staff assembled for basic research in eye diseases and can guarantee a stimulating environment. Rank and salary adjusted to fit the individual. Address: Dr. William H. Havener, department of ophthalmology, Ohio State University, Columbus, Ohio.

• **PATHOLOGIST:** Jefferson Medical College, department of obstetrics and gynecology. Position available for competent pathologist desiring full time activity in research in the field of obstetrics and gynecologic pathology. Position includes liaison with department of pathology of the medical college as assistant professor. New laboratories in the process of construction. Moderate salary. Apply to: Dr. Thaddeus L. Montgomery, department of obstetrics and gynecology, Jefferson Medical College, 1025 Walnut St., Philadelphia 7, Pa.

• **RESEARCH FELLOW IN VIROLOGY:** Two-year appointment in midwestern medical center with a well-equipped unit for research on immunogenesis and epidemiology of human and animal diseases. Academic appointment with limited teaching responsibilities. Address: V-38.

• **PSYCHIATRISTS:** Assistant professor or associate professor to serve as chief of psychosomatic section. Should be certified in psychiatry or internal medicine and qualified for an academic career. Geographically full-time position with limited private practice. Instructorships are also potentially available in various sections of this expanding department. Address: Merrill T. Eaton, Jr., M.D., Department of Psychiatry, University of Kansas Medical Center, Kansas City, Kansas.

• **GYNCOLOGIST:** Gynecologists whose orientation is toward academic and investigative gynecology are being sought for full time faculty positions in Cancer Institute with a modern 500 bed hospital. An active gynecology service with excellent irradiation and surgical facilities is available. Adequate facilities, personnel and space are available for a research program. Teaching affiliations are with the University of Buffalo Medical School. Address, director, Roswell Park Memorial Institute, Buffalo 3, New York.

• **ASSISTANT PROFESSOR OF PHYSIOLOGY:** The University of Alberta invites applications for the position of Assistant Professor of Physiology, effective September 1st, 1956, at a salary of \$4,000 per annum (Plus cost-of-living bonus now approximately \$300), with annual increments of \$250. Duties include undergraduate and graduate teaching and a program of research. Preference given to candidates with interest in metabolic or renal physiology and some training in pharmacology. Applications should include a recent photograph or snapshot, a curriculum vitae, and the names of three references. Send to the Dean of Medicine, University of Alberta, Edmonton, Alberta.


• **ASSOCIATE OR ASSISTANT PATHOLOGIST:** To Dr. David R. Manze. Board certified or eligible. Major general hospital, medical school affiliated; active teaching and research institution. Highly qualified staff. Address Albert Einstein Medical Center, Southern Division, Philadelphia 47, Pa.

Personnel Available

• **PHYSIOLOGIST:** Ph.D., 33. At present holds teaching and research position in medical school (6 years). Present rank assistant professor. Desires teaching position with research opportunities. Address: A-181.

• **MICROBIOLOGISTS** 24, Indian, B.Sc. (Microbiology) and B.Sc. (Chemistry) Bombay University. Experience in virus research and laboratory and serological work. Desires to study for Ph.D. in microbiology or bacteriology. Prepared to work on stipend or fellowship under any capacity. Address: A-182.

• **BIOCHEMIST:** Chemical pathologist, 28, Indian, B.Sc., M.Sc. Bombay with biochemistry, chemistry of food and drugs, first class B.Sc. (tech.) Research experience in enzymology, sterols. Taught chemical pathology, hospital biochemist for three years. Desires postgradu-



OUR 59th YEAR
WOODWARD
Medical Personnel Bureau
FORMERLY ARNOLD
3rd floor • 185 N. WABASH • CHICAGO, ILL.
• ANN WOODWARD, Director

Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

ACADEMIC OPPORTUNITIES IN MEDICINE, SURGERY AND THE SCIENCES. PLEASE SEND FOR OUR ANALYSIS FORM SO WE MAY PREPARE AN INDIVIDUAL SURVEY FOR YOU.

TO THOSE SEEKING DOCTORS OF MEDICINE AND SCIENTISTS FOR ACADEMIC POSITS PLEASE WRITE US FOR RECOMMENDATIONS OF WELL QUALIFIED MEN AND WOMEN.

STRICTLY CONFIDENTIAL

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

ate studies in biochemistry or chemical pathology leading to Ph.D. Prepared to work on stipend or fellowship in any capacity. Address: A-183.

• **PSYCHIATRIST:** 31, male, M.D., B.A. (psychology), seeks part-time teaching position in Philadelphia area. Experience in teaching at graduate and undergraduate level. Dynamic orientation. Address: A-184.

• **PHYSIOLOGIST:** Ph.D., 28, married. Experience in research and teaching mammalian physiology. Research interest in neurophysiology and comparative physiology. Publications. References. Desires teaching-research position. Address: A-185.

• **SURGEON:** University trained, certified by general and thoracic boards, early 40's, family. Experienced in applied cardiopulmonary physiology as well as all phases of thoracic and cardiac surgery. Presently director of large teaching unit in East. Publications include basic investigation. Desires relocation, preferably full-time, with opportunity to develop own unit along three lines, service to patients, teaching and investigation. Address: A-186.

• **MEDICAL ILLUSTRATOR:** Male, single, 27, draft exempt, presently employed full-time in a university medical school and hospital. Desires changes and position with better future. Six years actual experience in scientific and technical illustration for lantern slides and publication. References and samples will be furnished. Address: A-187.

• **ANATOMIST--ENDOCRINOLOGIST:** Ph.D., 35, family, desires teaching-research post in medical school. Three years experience directing endocrine and pathology sections in pharmaceutical house. Good teacher with experience in the various phases of anatomy. Publications and societies. Will accept administrative responsibilities. Address: A-188.

• **PH.D.:** Doctorate in zoology-endocrinology major. Have engaged in research in pharmaceutical industry in endocrinology, pharmacology, biochemistry, pathology and toxicology. Has served as research assistant at university, and has done pharmaceutical research for the Army. Seeks teaching and research position in medical school. Address: A-189.

• **HISTOCHEMIST:** For research project in large hospital in the East. Salary dependent on training and experience. Address: A-190.

• **HOSPITAL MEDICAL DIRECTOR (administrator):** Male, 47, married, M.D.; MPH in hospital administration from Yale. Experience with AMA's Council on Medical Education and Hospitals as member of field staff representing Council and Joint Committee on Accreditation of Hospitals; also assistant director of division of hospitals and graduate education. Seeks administrator position with hospital operating an approved graduate training program for interns and residents. Address: A-191.

• **INTERNEIST:** Male, 33, interested in full or part-time medical school affiliation. Has had three year residency at large midwestern medical school. Presently taking one-year period of training in endocrine and metabolic diseases, involving both clinical and research aspects. Address: A-192.

• **MICROBIOLOGIST:** Medical, male, Ph.D., 20. Teaching experience in medical bacteriology, parasitology. Present position, assistant professor of microbiology in medical college. Research experience in immunology, Sigma Xi, publications. Desires teaching appointment with research opportunities in a medical school. Address: A-193.

• **PEDIATRICIAN:** male 46, married. Amer. Board of Pediatrics, masters degree in pathology. Wishes teaching position in medical school or combined teaching, student health position. College teaching experience, 7 years. Address: A-195.

• **PARASITOLOGIST—PUBLIC HEALTH:** M.Sc., Ph.D., 41, married. Background in medical and zoological parasitology, including medical entomology, in government public health departments, hospitals and university pre-medical and medical school teaching. Societies, publications. Presently a senior parasitologist in a public health department and research associate in a large eastern university medical school. Desires full-time teaching position in a university with opportunity for basic and clinical research, preferably in association with local hospital laboratories. Address: A-196.

• **SURGEON:** S.B. and M.D., University of Chicago. Diplomate, general surgery. Three years experience teaching and research. Current rank associate in surgery. Particularly interested in teaching clinical surgery at undergraduate as well as graduate levels. Age 35. Desires full-time permanent academic appointment in clinical surgery. Address: A-199.

• **INTERNIET, TEACHER, INVESTIGATOR:** Former professor of medicine, qualified internist, member of societies, author, investigator in infectious diseases, much foreign experience, interested in obtaining academic position in clinical medicine with teaching and opportunity for research. Address: A-200.

• **ASSOCIATE PROFESSOR OF RADIOLOGY** at general hospital and university medical school desires position preferably in East. Credentials furnished on request. Address: A-201.

• **GENERAL SURGEON:** Age 39, M.D., C. M.; F.R.C.S. (Edin.); F.R.C.S. (Eng.); American Board eligible with teaching experience in anatomy, pathology and surgery desires full or part-time teaching appointment. Will consider any location. Address: A-202.

• **MICROBIOLOGIST:** Medical, male, Ph.D., 37, married. Experience includes: editorial assistant for scientific journal, industry (chemotherapy and drug resistance), and academic research. Present position research associate in medical school. Research background in antibiotics, drug resistance, chemotherapy, bacterial metabolism, carcinogens, nucleic acids, cytology, and mutations due to irradiation. Well-trained in photography and photomicrography. Desires teaching and/or research. Address: A-203.

• **BIOCHEMIST-INTERNIET:** Ph.D., M.D., 39, desires position combining research, teaching and clinical work. Chief clinical interests are rheumatology and endocrinology; diplomate of the American Board of Nutrition. Industrial research and teaching experience, publications, broad research background including radioisotope techniques. Address A-204.

• **YUGOSLAVIAN DOCTOR:** Married to American citizen, seeks academic position in American

medical school. Educated in Budapest, worked in Vienna, 1948-55, chief surgeon of surgical department, City Hospital in Senta, Yugoslavia. Speaks English, French, German, Hungarian and Serbian. Publications. Address A-205.

• **SOCIAL WORK TEACHER** in medical school: Female, married, 8 years teaching experience as faculty member in psychiatric and medical hospitals, wishes position as director of social service and teacher of medical students in the South, Southwest or Southeast. M.A. from U. of Chicago School of Social Service Administration. Available immediately. Address: A-198.

• **INTERNIET:** Board qualified, 39, seeks academic position in department of preventive medicine. Six years experience in full time teaching and research in preventive medicine in medical schools, one year experience in field public health work. Address A-207.

• **PEDIATRICIAN:** 32, formal training Ped. Neurology (one year) and EEG (one year). Dipl. Am. Board Pediatrics; member American EEG Society. Veteran. Desires full or part-time academic position in pediatric department with opportunity to develop child neurology program. Prefers West. Available July, 1956. Address A-206.

• **PHYSIOLOGIST—BIOPHYSICIST:** M.D., 35, married, experienced in use of radioisotopes, electronics, desires teaching-research position. Available July 1, 1956. Address: A-208

• **CHEMIST:** Ph.D., 43. Now associate professor of biochemistry in physically and financially cramped medical school. Seeks teaching and/or research position with appropriate remuneration and opportunity for professional growth. Prefer West or Far West. Available September 1956. Address A-209.

• **INTERNIET:** Well-trained; qualified use of radioisotopes. Available September 1956. Desires clinical faculty position on salaried basis, either full-time or part-time with private practice privilege. Military service completed. Age 30; married, with family. Address A-210.

• **INTERNIET-GASTROENTEROLOGIST:** 30, Full-time instructor in medicine with two and one half years of training in gastroenterology in a well-known midwestern university medical school. Special interest in biochemistry and physiology of the digestive tract. Desires relocation in full-time clinical position with opportunity for research and teaching. Address A-211.

• **ANATOMIST:** Ph.D. Male, 36, single. Experienced in teaching, broad academic background. Desires medical school position in teaching and/or research with opportunity to complete work toward MD degree part time. Address A-212.

Individual Membership

in the

Association of American Medical Colleges

Medical college teachers and administrators, and other persons interested in medical education now have the opportunity to become Individual Members of the Association of American Medical Colleges.

Individual Membership means receiving the *Journal of Medical Education* each month. It means participating in the discussions of the Annual Meeting and receiving the reports of the Teaching Institutes. It means receiving copies of the yearly *Directory*, the *Proceedings* of the Annual Meeting, and other Association publications. And it makes available a valuable, though limited, information service and a personnel exchange service.

Individual Membership, at only \$10 a year, is open to any person who has demonstrated a serious interest in medical education over a period of years. All the privileges of membership and a provisional membership card are granted immediately after payment of the \$10 fee, although confirmation must await official action at the next Annual Meeting.

To obtain membership, fill out the application form below, append check for \$10, and return to the Association's central office at 185 N. Wabash Ave., Chicago 1, Ill.

INDIVIDUAL MEMBERSHIP APPLICATION

Association of American Medical Colleges
185 N. Wabash Ave.
Chicago 1, Ill.

Name _____

Mailing Address _____

(City) (Zone) (State)
Field of medical education in which chief interest lies _____

College or other connection _____

SURGERY OF THE AMBULATORY PATIENT

by **L. Kracer Ferguson, M.D., F.A.C.S.**

866 Pages, 664 Illustrations.....\$12.00

New, 3rd Edition

The Third Edition of Ferguson offers the same fine literary and physical qualities for which the former editions were noted. It presents a competent and truly comprehensive presentation of technics and procedures proved useful and helpful in the surgical care of dispensary and office patients. There are new chapters on Anesthesia, by H. R. Stone, M.D.; Folliculitis, Furuncles and Carbuncles, and Treatment of Inflammation Due to Infection, by Lt. Col. Edwin J. Pulaski, M.C., and The Genito-Urinary System, by Harry M. Burros, M.D. The comprehensive and popular section on fractures and dislocations, by Dr. Louis Kaplan, also revised and brought up to date, remains as an important part of the new edition.

ESSENTIALS OF PHARMACOLOGY

by **Frances K. Oldham, Ph.D., M.D.; Fremont E. Kelsey, Ph. D.; Eugene M. K. Geiling, Ph.D., M.D.**

486 Pages.....\$6.00

New, 3rd Edition

Offering an up-to-date presentation of essential knowledge particularly in the fields of antibiotic and chemotherapeutic agents. The third edition includes new chapters on Chemotherapy of Tuberculosis and Leprosy, Antitreponemal Drugs, and Antitrypanosomal Drugs. 56 new structural formulas have been added bringing the total to 234.

MEDICAL LICENSURE EXAMINATIONS (Rypins)

Prepared under the editorial direction of **Walter L. Bierring, M.D., F.A.C.P., M.R.C.P., Edin., (Hon.)**

856 Pages.....\$8.00

7th Edition

Presenting a compact and orderly review of thirteen major medical subjects together with actual questions based on essential facts contained in the text. Serves as logical refresher study in preparation for all types of tests, whether oral or written, essay or objective!

ANATOMY IN SURGERY

by **Philip Thorek, M.D., F.A.C.S., F.I.C.S.**

970 Pages, 720 Illustrations.....\$22.50

211 in Two or Three Colors

1st Edition

The anatomic material in this magnificent and instructive book is organized and presented on a regional basis. The scope of this work, which covers the entire body, is to show the application of anatomic facts in relation to normal function and to traumatic and pathologic conditions of the human body. Structure and function are fully considered and each section presents surgical considerations with a clarity and conciseness of text offering accurate information readily and quickly. Designed for learning or reference.



Available for examination at all regular medical bookstores.

J. B. LIPPINCOTT COMPANY

EAST WASHINGTON SQUARE

PHILADELPHIA 5, PA.